Virginia Medical Monthly

Official Organ of the Medical Society of Virginia

Vol. 58, No. 12.
WHOLE No. 957.

RICHMOND, VA., MARCH, 1932

20 CENTS A COPY
$2.00 A YEAR

MORAL SUBNORMALITY AS AN EXPRESSION OF MENTAL UNSOUNDNESS.*

O. B. DARDEN, M. D., Richmond, Va.

Within this classification I am including that large group of people who are unable to make a satisfactory social and economic adjustment in the world, as evidenced by some conduct disorder. Eventually, these people become problems for their relatives or for their respective communities. In many instances the conduct problem becomes so grave that the offenders are hailed into court as crimina's.

Inasmuch as these people are morally irresponsible, such treatment at the hands of the public is both wrong and dangerous from the viewpoint of the psychiatrist. Not only is punishment unnecessary, but it may lead to a permanent unwholesome attitude on the part of the patient, with continued antisocial conduct that defies correction and eventuates in a well-defined criminal career. Therefore, we, who are constantly called upon to deal with such situations, believe that something constructive may be gained in the proper handling of such people, and it is this fact, I think, that justifies this paper.

From the medical viewpoint, the vast majority of people with conduct problems can be placed in two large groups: Mentally subnormal and psychopathic personality states. I shall discuss these two groups separately.

The Mentally Subnormal

Mental defectives are classified as idiots, imbeciles, and feeble-minded, depending upon the degree of the mental enfeeblement. It is obvious, therefore, that these terms are used to designate a difference of degree in the same condition. "Mentally defective," a general term used to include all grades of mental subnormality, is often loosely applied to those who are obviously below the normal level. Feeble-mindedness, although a general term, and literally including the same large group, is usually used to designate a more limited lack of mental development, and since the use of the psychometric tests have been in general use, is particularly applied to those with an intelligence quotient from 40-70. This group includes a rather wide range of mental enfeeblement, and is, therefore, subdivided into smaller classes according to mental capacity. There is still another class of patients that fall within this group that I shall designate as border-line or mentally subnormal. While these patients do not fall within the feeble-minded group, yet they do not have the mental requirements of normal people.

Of course, I realize that our measuring rod for the determination of normal mentality is quite elastic and I realize that the term itself denotes a relative state rather than a well fixed and exact condition. At the same time there must be certain rather well-de ned criteria for fixing a mental state we think of as normal.

We know that the primary function of the central nervous system is to bring about a satisfactory adjustment of the individual to his environment. Organisms which have few and simple relations with the environment can adjust themselves to only a small range of external conditions. The more highly developed organisms, however, which have many diverse relationships, can utilize an extensive series of possible adjustments. It is this function of the highly specialized nervous system in man that so readily differentiates him from other animals. This function of the nervous system is represented by the reactions of the organism-as-a-whole. Psychology is, therefore, a study of the tendencies of the whole individual as expressed in the psyche, or the functions of the individual or, as has been expressed, of the total reactions of the individual, in distinction from physiology which deals with

*Read by invitation before the Fourth District Medical Society, at Rocky Mount, North Carolina, November 10, 1931.

only the functions of the several parts, or of the individual organs of the body. Let me emphasize, if you please, that psychology deals with the individual as a whole, with total reactions. Therefore, just as in determining the normal mentality, we must consider the total reactions, so in considering abnormal mentality a similar study must be made.

It is beyond the limitations of this paper to discuss the normal mentality, but I shall call your attention to a few of the more outstanding requirements.

In childhood, obedience and respect for parents, with average progress in school, are well known criteria. Later, normal ambitions appear with a sincere effort to reach a definite goal. At the same time certain well-defined behavior characteristics are considered, as well as stipulated emotional reactions. Law and conventional rules, to a large extent, require a rather exacting social adjustment, even at the expense of repression of instinct and inherited traits. It will be noticed that this crude outline includes intellectual capacity, the emotional status and behavior standards as outlined by our cultural and social concepts. Thus it will be seen we are making a complete survey of the individual's natural equipment and are considering no part of the organism alone.

Not infrequently a patient is seen, about whom it is said there is nothing wrong except some particular conduct disorder. A detailed account of the patient's life, necessarily obtained, for the most part, from a relative, often fails to disclose but one gross defect. But upon further questioning and with a painstaking and tedious search for further evidences of deviations, other suspicious manifestations may be obtained. At other times the examiner must reach his conclusions solely from his own study and observations. Sometimes this may be due to wilful deception, or to reluctance on the part of the family to divulge a real situation, while perhaps just as often it is done with absolute ignorance of the patient's condition. Not only is such an attitude often adopted by the family, but occasionally the referring physician may corroborate such a history and concur in the belief that the patient has only some trivial conduct disorder.

Recently a patient was admitted to the sanatorium for alcoholism. The brother stated that the patient had an excellent mind and was a splendid salesman; that if he would just leave whiskey alone he would be an outstanding man. A detailed study of the personality of the patient revealed, however, that he was intellectually well below the average intellectual level; that he had no ambition; that he had never manifested any sense of responsibility for his family, and that he had little appreciation of his proper relationship to society. In other words, compared with his brother, he was lacking in man-stuff. He was genteel in appearance, wholesome looking, affable in manner, and ordinarily he moved about in the world as normal. In the sharply circumscribed activities of a stereotyped clerkship his behavior justified such a judgment of him.

More frequently than is suspected, perhaps, a personal catastrophe serves to reveal as a causative factor fundamental abnormality or lack of capacity. I recall, for example, a middle aged man who had lost the greater part of his fortune in an effort to establish a banking and brokerage firm. Following this unsuccessful business adventure, he traveled extensively. Finally he was brought into the hospital submerged in alcohol. Examination revealed in this man a total lack of those qualifications that go to make up a normal individual. His judgment, for instance, was immature; his sense of responsibility was inadequate; he had never been actually productive, and he could not live within the conventional rules of society. This man might have occupied, with some degree of comfort and success, a small niche, with limited, but well-defined duties, but he was inherently lacking in the capacity for adjustment in any large sphere.

Threats of suicide, empty perhaps, but alarming to his family, sent another man into the sanatorium. He had never accomplished anything worthwhile, but his brother, who was ambitious for him, had tried time and again to evolve him into a productive citizen. But ultimately, when the patience of the family had become exhausted, and spending money was refused him, he flew into a rage and made kindling wood of much of the household furniture. Such a destructive outburst of behavior, followed by threats of suicide, precipitated his prompt admission into the hospital. A comprehensive study of this patient revealed the emotional immaturity of childhood and equally defective judgment. His threats and destruc-

tive behavior were childish tantrums, staged for the purpose of cowing and dominating his family. He probably had no idea of terminating his life. His family was advised to avoid overloading him mentally and to deal understandingly with his feelings.

Naturally you are wondering: Why attempt to classify such conditions? What can be done for such individuals? Indeed, you may ask whether such behavior problems come within the domain of medicine. Not only is the care of this type of individual a medical problem, but it is a social and an economic problem as well. Many patients, both in private and in public institutions, fall within this category. It must be remembered that such individuals much more infrequently than normal persons become actually insane. But, in an insane asylum they are at least safe. Unguided and uncontrolled out in the world, they become the victims of those who use them and of their own unrestrained instinctive urges. They often disseminate venereal disease and constitute bad companions. The first problem is, therefore, to recognize these abnormalities early. When and how can this be done?

I believe that the most useful function of the State Mental Hygiene Clinic will be to detect such conditions. It must be borne in mind that when such children are looked upon as normal they necessarily must grow up in the environment of normal people and live with normal people as competitors in their activities. That is, obviously, unfair and unjust, and must prove to be disastrous to the subnormal. They cannot make a satisfactory social and economic adjustment in such an environment. As they grow older in years they fail in accumulating helpful experience and they become the hopeless victims of their own incapacity. Before their experiences have led them into paths from which they cannot be led backward, preventive medicine must discover, then estimate their capacity, prescribe their mental pabulum, and discover or prepare those niches into which they will individually fit. It is during the school age or even during the pre-school age, that they can best be studied and understood. A particular sort of work, suitable for the temperament and personality make-up of the individual, must be found, and no attempt must be made to push the child beyond his intellectual capacity. Often it happens that the ambitious parent wishes something better "for my boy" or "my girl," but intellectual capacity and personality, and not birth nor parental ambitions, pattern one's life. When this simple, fundamental fact is recognized and when we become willing and competent to provide for the subnormal such mental alimentation as they will ingest, and can digest and assimilate, then I believe we will have gone far into the field of another sort of preventive medicine. Every problem child is a not-understood child and should be studied by physicians trained in conduct disorders.

Psychopathic Personalities

Under the caption, psycopathic personality, is grouped a large variety of abnormalities of character. A detailed discussion is impossible here and a definition of a condition with such indefinite and broad limitations is very difficult. I shall, therefore, attempt to point out only a few of the salient features of the personality make-up of those falling within this group. White has very aptly decribed these people as "ill balanced, eccentric individuals who may be superficially brilliant but who lack continuity of purpose, and the capacity for the continuous expenditure of effort in any one direction." The crank, the pathological liar, certain types of swindlers, many juvenile delinquents, ne'er do wells, the black sheep of the family, the queer, eccentric person, the wanderer, the shiftless, often fall into this category. This group is composed of a vast reaction type, "from which criminals are recruited and which present to society some of the most difficult of its problems." From the foregoing it will be seen that the psychopathic constitution is made up of many abnormalities of character that lead to an inefficient type of adjustment of the individual to his environment.

A youngster long before he reached the age of nine years, kicked over the parental traces, and became wholly unmanageable. He would run away from home, roam the city, and supply himself as freely as if his purse were bulging with coins. He was constantly in every conceivable sort of mischief; his admission to the Sanatorium came as the result of a foolish attempt to hold up a store. He seemed to be utterly lacking in moral sense; he was wholly untruthful; he stole, swore, fought, was entirely unafraid and respected neither God nor man. He had been punished frequently and severely at home and had been taken repeatedly

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to juvenile court, but no form of punishment in any way awed him or lessened his misbehavior. He is profoundly abnormal, congenitally so, wholly devoid of moral concepts, and if an adult would constitute a terrible menace to society. He has had to be permanently institutionalized.

A well-to-do real estate agent who had spent money liberally and lived in luxury was admitted to the hospital because of a violent emotional upheaval. The patient had been spending the money of others for his own pleasure and to maintain a high plane of living. He was looked upon as a criminal, but a complete diagnostic survey revealed a man of apparently splendid intellect but with a lack of normal moral fibre, an unstable emotional make up, and a complete lack of appreciation of his duties to his own character and to business associates, and to society. It is believed that this man could have filled, in admirable fashion, a position with less responsibility. He was a high pressure salesman, and was familiar with big business tactics, and gloried in the pomp and luxury necessitated by contacts with the financial leaders of his community. But temptation was too great for him. He was totally incapable of resisting the use of funds in his possession, just as long as final settlement was not near at hand. Had his position required a daily accounting, there is little doubt that he would be an influential citizen today, rather than an embezzler, on whom his creditors are seeking vengeance through the medium of the courts.

Punishment is probably without corrective influence in such individuals. Unaided and unguided they cannot live normally in a normal world, because they are not normal. It is not surprising that an inherent constitutional defect of character cannot be corrected by punishment. This type of law violator becomes a recidivist. He repeatedly suffers arrest and conviction, and the majority of the prison population are those who are sent back again and again. If such violators should not be sent to penal institutions, then, naturally, the question arises, what disposition should be made of them? Again, let me emphasize that we must adopt an understanding and a helpful plan in dealing with such folks. Condemnation has no value, but is hurtful to the defective and to society. First of all, an analytical study must be made of the individual. His characterological defects must be recognized and his motivations must be understood. In this way alone can an understanding of his problem be reached. And the longer the study is postponed, the more difficult is understanding. The older the patient, as a rule, the greater the maladjustment, unless some helpful influences have been provided. Here again the Mental Hygiene Clinic can do a great work by gaining the cooperation of parents in placing these unfortunate people in that environment best suited to their individual make-up. The family physician, above all others, is able to induce parents to have problem boys and girls properly studied to the end that they may be understood and afforded that care and guidance, without which they would become ever-lasting derelicts, a sorrow to their parents, a menace to society, and an economic burden to the State.

Westbrook Sanatorium.

THE PRACTICAL APPLICATION OF THE MODIFIED ASCHHEIM-ZONDEK TEST FOR PREGNANCY: DEMONSTRATION WITH TEST ANIMALS.*

WILLIAM K. LLOYD, A. B., M. D., Christiansburg, Va.

It is not the purpose of this paper to bring out any especially new or original ideas that may be applied to the various tests for the diagnosis of early pregnancy, but rather to attempt to show the falsity of the idea (which I believe still prevails in the minds of most physicians) that the test requires elaborate laboratory facilities; and to demonstrate that the test used may be employed to advantage by any general practitioner. Not even a microscope is essential. All that is absolutely necessary for a test is the suspected (voided) urine, a non-pregnant female rabbit over eleven or twelve weeks old, a hypodermic syringe and a scalpel (a pocket knife will answer).

Nor is there any intent on my part to present any of the boresome statistical data, in detail, on the efficacy of the test. Suffice it to say that the test is 99¼ per cent accurate, according to a summation of all results that I can find in the literature. There are men who have had 100 per cent accuracy. Eberson†, of San Francisco had such accuracy in 175 cases. His technique is to me rather compli-

*Read at the sixty-second annual meeting of the Medical Society of Virginia, in Roanoke, October 6-8, 1931.

†J. A. M. A., Vol. 96. No. 26. June 27, 1931.

cated. He uses white mice and concentrates the female sex hormone in the urine by a rather difficult process. He states that this method shortens the time in which he is able to make a diagnosis. Well, it does, basing the shortening in time on the original Aschheim-Zondek test, which required eight or nine days; but certainly the test is consummated just as quickly, if one uses the rabbit, which is certainly the animal of choice with me.

As Reinhart and Scott‡ point out, often a rabbit may be opened after twenty-four hours, show a positive reaction, closed again and live to undergo another test. They convincingly point out also the difficulty of obtaining white mice of the right age, et cetera, for the test.

Beasley§, using rabbits, reports 100 per cent accuracy in fifty-two cases, excluding five cases. In two of his cases the rabbits died before the test was completed; in two cases the animals were too young; the fifth case proved to be a woman carrying a foetus which had been dead for three or four weeks.

For years obstetricians and physicians in general have searched for a "sure-fire" way of diagnosing early pregnancy and up to a few years ago, all tests, while apparently seeming accurate for a short time, have later proven utterly without value, until Aschheim and Zondek* published their paper in 1928. They demonstrated the existence of a female sex hormone in the pituitary body and its presence in the urine of pregnant women. Their technique, while paving the way for later modifications, was tedious, eight or nine days being required for the test, and the use of immature white mice, four animals being required for one test. In addition, microscopical sections had to be made to prove the diagnosis. Now, in the rabbit, we have an animal, easy to procure, easy to handle in injecting the test urine, and easy to diagnose the positive or negative reaction by a glance at the gross appearance of the ovary.

In my rather limited series of thirty-four cases, the test has proved 100 per cent accurate, by later clinical observation; however the test was delayed in two cases, and required a second animal. One of these animals died from chloroform anesthesia while the injection was being given; the second, on undergoing a laparotomy, proved to be already pregnant. However, sufficient urine in each case was saved and used later on other animals with perfect results. In this connection, further explanation will be made below in the actual technique.

At this point allow me to give five distinct points of value of the test and cite one case out of my group to illsutrate each indication:

1. Differentiation Between Tumor and Pregnancy

Illustrative Case: Mrs. "R," age 32, para 3, no menstrual irregularities previously, missed four periods; she had nausea; the cervix was somewhat softened; and she even had soreness of nipples. She had an enlargement of uterus which, however, was not quite sufficient for a normal four months pregnancy. Three other physicians had told her they thought she was pregnant. She denied the possibility of pregnancy. The test was used. It proved negative; laparotomy was done and a submucous fibroid, implanted low, with a hemorrhagic area above was removed.

2. Diagnosis of Pernicious Vomiting of Pregnancy

Illustrative Case: Mrs. "B," age 24, nullipara, last menstrual cycle sixteen days previously, began vomiting, as if pernicious vomiting of pregnancy. Clinical examination showed nothing else to indicate pregnancy. For three days the various relief measures were adopted, glucose solutions intravenously, and by rectum. Urinalysis was negative except it showed a great decrease in amount, three to four ounces daily. Her loss of weight was extensive, fourteen pounds in four days. The blood pressure was normal. The test was used twenty days after her last period and eight days before the next expected; it proved positive; the uterus was emptied by therapeutic abortion and there followed an entire disappearance of vomiting.

3. The Pregnant Nursing Mother

Illustrative Case: Mrs. "C. B.," age 29, para 2, youngest child six months old, nursing. Patient had not had a period since birth of the child. Had early morning nausea, and the baby began to show gastrointestinal disturbances, with attendant loss of weight. Vaginal examination of the mother showed slight softening of cervix, no apparent uterine enlargement; other signs and symptoms of

‡J. A. M. A., Vol. 96. May 9, 1931, PP. 1565-1567.
§J. A. M. A., Vol. 96. June 27, 1931, P. 2234.
*Zondek, Bernhard, and Aschheim, Selmar; Klin; Wchnschr. 7: 1453, July 29, 1928.

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pregnancy absent. Pregnancy was suspected, the test made proved positive and baby removed from breast. Mother and child are now doing nicely and the mother has since felt foetal movements and I have heard foetal heart sounds.

4. The Medico-Legal Aspect—Rape, Etc.

Illustrative Case: Miss "S," age 18, complained of rape having been committed on her ten days previously and two days following the last day of her last menstrual period. Examination by another physician proved rather negative, hymen almost intact. Eight days later the test was used showing a positive reaction and subsequent clinical observation has proven pregnancy.

5. Value for Advising Immediate Marriage in Early Pregnancy

Illustrative Case: Miss "A," 17, and Mr. "G," 23, young people of excellent social standing, apparently quite in love with each other, and already intent on marriage as soon as they could obtain their parents' consent, which had been refused. Had a "premarital accident," six days previously and one day after last day of girl's last period. I waited two weeks then used the test; it proved positive. Advice as to immediate marriage was given and followed and "I hope the couple will live happily ever afterward."

To these groups of indications, one will naturally add many others. These happened to be the outstanding five groups in my series. However, I would like to add one more large group, that vast horde of women everyone of us meets almost every day, that group who simply *want to know* whether they are or whether they aren't. We've all, I suppose, at least I have, stalled around with "you may be, I really think you are, but am not sure, no, you will really have to wait two or three months yet to be sure," etc., *ad infinitum.* Now we can say, "come back in two days and I will tell you whether you are or not."

Now about procuring the test animals. Any female rabbit over eleven or twelve weeks old that is not pregnant and that has been kept in a pen to herself for a week or more is all right. In June of this year when I first began using the test, I bought rabbits of this description from various outside sources. One rabbit, as I have mentioned above, proved at operation to be pregnant and of course made the test of no value. Others died (I imagine were sick when I got them) while being isolated in my pens waiting for a test; so, on learning the ease with which rabbits are raised and how prolific they are, I decided to put in my own backyard hutch and consequently I now know the sex, age, and condition as to pregnancy of my own test animals.

I hope the detailed information following will not bore you. It is prompted by the knowledge that in most papers I have read, on any subject, the author, while explaining the full merits, etc., of his paper, fails usually to give any concise information about just *how* to do what he has done. And, as I have stated before, my purpose in reading this paper is to demonstrate the practicability of the test to the ordinary practitioner.

I decided that since I was going to raise my own, I would get good stock. In July I ordered a trio of pedigreed Himalayans. I picked this stock for two reasons: first, they mature very early (ten to twelve weeks), and secondly, they are very hardy. There are several rabbit farms in the country. I procured my stock from Englewood Fur Farms in Missouri. The market affords any number of good books on how to breed and care for rabbits.

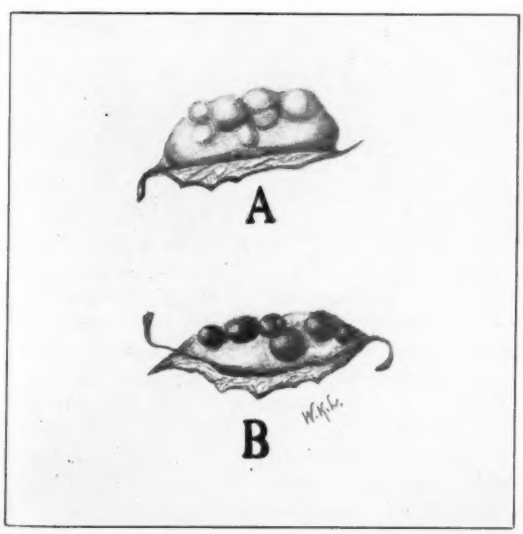
A word here about the rabbit that died while injecting the marginal ear vein under chloroform anesthesia. I believe the anesthetic entirely responsible for death. This particular rabbit was one in my early series and one bought from an outsider, a wild one. I have since learned that wild rabbits are too hard to manage, but at that time used them because I had none of my own. After having several to jump and twitch, causing the needle to slip out of the vein, I decided to try anesthetizing the animals even for the injection of the urine. I have long since given this up and rely entirely upon my assistant holding the animal still, which is experienced with no difficulty with the tame variety I now use. But, as a warning, if you want to save your animals for future use, I advise ether as an anesthetic which the rabbit takes very well, but not chloroform. It has long been known that chloroform is a dangerous anesthetic to animals, and I have found it so, particularly in dealing with rabbits. I have a live rabbit that has undergone three tests (author showed rabbit as Exhibit C), one negative and two

positive reactions. Ether anesthesia was used each time. The first test proved (after laparotomy) to be negative; the wound was closed and two weeks later a second test was positive; one ovary was removed and is the one exhibited marked "B." Two months elapsed, and again another positive reaction on laparotomy, the second ovary not being removed, and consequently, this animal is in the pink of condition for another test, having recovered from her former numerous operations and having one ovary still remaining. If you perform a laparotomy in twenty-four hours and obtain a negative reaction, you may use the animal again in two weeks; if, however, the reaction is positive you may use the animal again in two months, as even after a positive reaction the ruptured graafian follicles are absorbed in that time.

I my series I have followed closely the technique of Reinhart and Scott, of Columbus.

Technique of Injecting the Animal With Suspected Urine

I use a 10 c.c. syringe, being first assured of the fact that the voided morning specimen is acid. If alkaline, I add acetic acid till the urine is mildly acid to litmus. Use a small needle, 23 or 25 gauge, and without any anesthesia (I have found that an ordinary battery type otoscope held under the rabbit's ear, and the injection given in a somewhat darkened room, greatly facilitates the procedure), I inject 8 to 10 c.c. of urine into the posterior marginal vein of the rabbit's ear.



Exhibits A and B.

Technique of Operation

On the following day I do a laparotomy under ether anesthesia and, if positive, close the wound and diagnose the woman pregnant. If the animal lives I save it for future use. If on the other hand the test proves to be negative, I do one of two things, I either

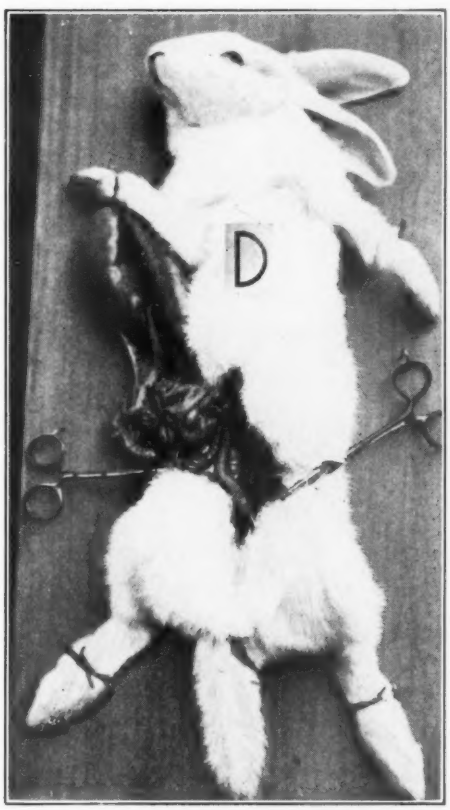


Exhibit D.

inject 8 or 10 c.c. more of urine or simply wait another day and do a laparotomy, or necropsy as you prefer. If still negative I give a negative diagnosis. If positive and only a laparotomy is done and the animal lives, I save her for future use.

In determining the results of your test it is of course primarily necessary to be familiar with the appearance of the normal ovary of the rabbit. The mature rabbit's ovary presents a picture of ripe graafian follicles, varying

in number from three to nine, all of a pinkish color, and, if numerous, present the appearance of peas in a pod. Of course, if the suspected and injected urine of a woman who is not pregnant be used, the ovary will still present this appearance. If, on the contrary, the "peas of the pod" are dark red or almost black and very swollen, it means that the follicles have ruptured and, therefore, also means a positive test. After making a glance at a few gross specimens, it's simplicity itself.

Exhibit A is a normal (or negative) ovary of the rabbit. This shows unruptured but ripe graafian follicles.

Exhibit B shows six ruptured follicles and, therefore, a positive result. Incidentally, Exhibit B is an ovary from the live rabbit (Exhibit C) who has undergone three laparotomies, but still has another ovary remaining for another test.

Exhibit D is an example of a negative reaction with dissection to show ripe but unruptured graafian follicles.

Exhibit E.

Exhibit E is a rabbit, positive in reaction, showing ruptured graafian follicles. Incidentally, this is an embalmed animal which was used in the illustration of indication number "5" above, i. e., "value for advising immediate marriage in early pregnancy."

Summary

The female sex hormone is present in the urine of pregnant women. Its presence in the urine is demonstrable by causing changes in the genitalia of animals into whose blood stream the urine has been injected. The rabbit is the test animal of choice, first, because of the ease with which it is procured, and second, the fact that positive or negative reactions may be recognized in gross specimens instead of having to resort to frozen sections and the microscope. The test is 99.25 per cent accurate in a summation of various articles in literature and, therefore, has a definite place in the modern practice of obstetrics and medicine in general.

THE VALUE OF THE HORMONE TEST FOR EARLY PREGNANCY.*

WALTER B. MARTIN, B. S., M. D., F. A. C. P., Norfolk, Va.

The diagnosis of early pregnancy and the differentiation of pregnancy from other pelvic conditions has been made possible by the work of Aschheim and Zondek[1] and of Friedman.[2] In 1928 Aschheim and Zondek reported the result of their study on one thousand pregnant and non-pregnant cases with correct diagnosis of the condition in 98.2 per cent. Their method is based on the fact that the urine of pregnant women contains an increased amount of a substance similar in action to the anterior pituitary hormone and when such urine is injected into immature female mice rapid development of corpora lutea and corpora haemorrhagica follows. These results have been amply confirmed by other investigators, but the method of Aschheim and Zondek has not received widespread clinical application on account of the difficulty of maintaining a sufficient supply of mice. Each test requires the use of five or six female mice of a rather limited age variation. In an active clinic an enormous supply of mice would be required to make the test available at all times.

*Read at the sixty-second annual meeting of the Medical Society of Virginia, in Roanoke, October 6-8, 1931.

Friedman in 1929 produced rapid ovulation in female rabbits by the injection of urine of pregnant women. In each of eighteen rabbits injected with urine from pregnant women there was a prompt appearance of the characteristic changes in the ovaries. His control animals, fourteen in number, injected with urine from non-pregnant women, showed no changes. The advantage of this method over the original Aschheim-Zondek technique is obvious. The first test requires the use of five or six immature female mice three weeks old for each experiment and the result cannot be determined until after four days. Friedman's modification requires one female rabbit twelve to fifteen weeks old and the result can be ascertained in twenty-four hours. More recently Friedman[3] has modified his technique and instead of a single injection he now gives 4 c.c. of urine intravenously three times a day for two days and examines the rabbit's ovaries forty-eight hours after the first injection. By this method he has not encountered a single error in forty-five negative and forty-seven positive reactions.

Schneider[4] using the Friedman technique in twenty known cases of pregnancy obtained positive results in all of the rabbits injected. In twenty-five non-pregnant cases all were negative except five. These, however, were cases in which the urine was obtained twelve, eighteen, twenty-four, forty-one and sixty-seven hours after delivery. It is interesting to note how rapidly the test becomes negative after delivery. In twenty cases of suspected pregnancy Schneider also obtained positive results and the fact of pregnancy was later confirmed in each instance. In thirty negative tests only two proved to be incorrect. In these two cases rabbits only six weeks old were used. Subsequent test with twelve weeks old rabbits proved positive.

Reinhart and Scott[5] in one hundred and fifty clinical cases encountered only two errors in diagnosis. In one of these cases there was a possibility of error in collecting the urine specimen.

Magath and Randall[6] record eighty-six cases. Of forty-seven non-pregnant women all gave negative results but one. In this one instance a buck rabbit had by mistake been put in the cage with a female, probably accounting for the positive result. In thirty-eight pregnant cases positive results were obtained in all but one. A subsequent test four days later gave a positive finding in this case.

Beasley[7] reports on fifty-two cases of pregnant and non-pregnant women with a diagnostic accuracy of 100 per cent, after rejecting five instances for adequate reasons.

It is thus seen that the test possesses a high degree of accuracy both on the positive and the negative side. In my own laboratory twenty-five tests have been carried out on rabbits by the intravenous method. Rabbits twelve to fifteen weeks old are used that have been kept carefully separated from the males. A clean voided specimen of the night urine is used. Seven c.c. of this is injected into an ear vein of the animal. At the end of twenty-four to forty-eight hours the animal is sacrificed and the ovaries are examined for the presence of corpora lutea and corpora haemorrhagica. In most instances a twenty-four hour interval is sufficient but if there is no great urgency it is better to wait the longer period.

Of seven known pregnancy cases used as controls, all gave a positive response, while in four negative controls there was no deviation of the ovaries from normal. Five cases in which the diagnosis was uncertain and that gave positive response since have been proven clinically. In six other cases that came in for diagnosis the negative findings have also been confirmed by subsequent development. One negative and one positive case have not yet been proven. In twenty-four cases there are two instances in which the clinical data are not yet sufficient to confirm the laboratory findings. In the remaining twenty-two cases, ten negative and twelve positive, in each instance the laboratory findings have been borne out by clinical developments. A few cases will be briefly quoted to illustrate some of the problems encountered in the diagnosis of pregnancy.

Case No. 7—Girl, 14, unmarried. Both patient and family denied any possibility of pregnancy. Positive reaction confirmed clinically.

Case No. 12—Age 39, no pregnancy for thirteen years; missed two periods. Positive. Confirmed clinically.

Case No. 15—Known pregnancy, death of fetus suspected. Test positive. Subsequent course proved fetus to be viable.

Case No. 16—Question of pregnancy complicating acute appendicitis. Test negative. Operation, removal of appendix. Uterus a

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little enlarged. Normal menstruation a few days later.

Case No. 19—Patient 46 years of age, youngest child married. Had not menstruated for four months and was sent to one of the local hospitals for operation for suspected ovarian cyst. Friedman test showed clear-cut positive result which was later confirmed by the clinical signs.

These cases are quoted briefly to illustrate some of the problems that confront us and illustrate the value of an accurate test for pregnancy. It is realized that the data submitted are too limited to draw definite conclusions but taken in conjunction with the accumulated work of others it serves to further confirm the clinical value of this method.

Conclusion

The method originally outlined by Aschheim and Zondek and as modified by Friedman for the diagnosis of pregnancy is a simple procedure, easy of interpretation, and of a high degree of accuracy.

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201 *West Freemason Street.*

Discussion of Papers by Drs. Lloyd and Martin

Dr. A. H. Groseclose, *Roanoke:* Dr. Lloyd and Dr. Martin have told you about how simple and accurate the test is, but Dr. Lloyd has found another problem in working his test. He would like for some one who knows to tell him how he may know the sex of the rabbit before six weeks old, so he can kill off the bucks and keep the does. If someone can answer that question for him he will appreciate it very much.

For years back, people have tried to work out a "sure fire" test for pregnancy, and all the tests have been found to have some fault. It was thought when the sugar-tolerance test came out, that that was the test we were looking for. It has proved, however, that there are too many positive reactions in persons not pregnant, especially in males. On the other hand, a very recent report of two thousand cases of the Aschheim-Zondek test showed an accuracy of 98 to 99 per cent.

Of course, as Dr. Lloyd and Dr. Martin brought out, the rabbit test is much simpler than the original Aschheim-Zondek test.

One of the clinical conditions in which the determination of pregnancy is valuable is hydatidiform mole. In cases of hydatidiform mole the sex hormone is present in the urine in very high concentration; the concentration in the urine is much greater than in pregnancy. There is also found to be very high concentration in the urine in cases of chorioepithelioma. The test will remain positive until all the tumor has been removed.

One of the paradoxical questions is that the hormone appears much more concentrated in the urine than in the blood. In early pregnancy the concentration in the blood is very slight. This shows, possibly, that the hormone is secreted by the urine very rapidly.

Dr. J. Shelton Horsley, *Richmond:* These two papers are extremely interesting, and the application of these tests has been made in fields quite different. Dr. Ferguson, of the New York General Memorial Hospital, has used this test with considerable success in teratoma in males—teratoma of the testicle. As you know, this is an extremely malignant tumor and grows quite rapidly, so early diagnosis is extremely valuable. This test is used for the determination of the presence of teratoma, being embryonic structure. It is positive in a very high percentage of cases of teratoma of the male genitals. This teratomatous tissue produces the same stimulation to the anterior lobe of the pituitary body and consequently has the same hormone in the male as would pregnancy in the female.

Dr. Lloyd, closing the discussion: I think Dr. Horsley has brought up a very interesting phase of this subject, as has also Dr. Groseclose. Incidentally, the one that Dr. Horsley mentioned will not interfere with our modified Aschheim-Zondek diagnosis of pregnancy because this type of tumor only occurs in the male. I have not had occasion to use the test in that way, but I certainly shall do so in the first suspicious case I have.

I just want to repeat the request Dr. Groseclose made for me, and I am through. If any of you can find out how to tell the sex of the young rabbit at birth, so we can discard the buck and keep the doe, I should certainly be delighted to hear about it.

CANCER OF THE CERVIX: OBSERVATIONS DRAWN FROM THE STUDY OF ONE HUNDRED CASES TREATED WITH RADIUM.*

W. LOWNDES PEPLE, M. D., Richmond, Va.
McGuire Clinic, St. Luke's Hospital.

Until the cause of cancer is discovered, its treatment will continue as it is, and always has been, purely empirical. In the meantime, while the scientists and laboratory workers are attending to this phase of the subject, is there anything that we the clinicians can do? It is because I believe that we can do a great deal that I have been actuated to present this paper.

The treatment of cancer of the cervix naturally divides itself into three phases, the Prevention, Active Treatment and After Care.

*Read before the Medical Society of Virginia at its sixty-second annual session, in Roanoke, October 6-8, 1931.

PREVENTION: What are the facts that lead us to believe that anything practical can be done in the way of prevention? In most large series of cases it will be found that about 85 per cent of these women have borne children. In most of these a tear in the cervix can be seen or felt. Where the disease is so extensive as to have covered it up, the presence of a tear can usually be logically inferred from an account of some one particular labor. I do not recall but one case of cancer of the cervix occurring after a surgical repair and that one was one of my own. I am convinced that the disease was present at the time of operation and the microtome blade missed it in the section chosen from the specimen. In all of our cases now we are asking the specific question: "Has a repair or cautery operation been done on your cervix since the birth of your last baby?" So far all have answered, "No." Bartlett and Smith,* in a study of cases treated at the Free Hospital for Women, Boston, make this significant statement: "Approximately 1,700 cervices were cauterized in this hospital, between 1914 and January, 1929. No one of these patients is known to have developed cervical carcinoma. Deep radial cauterization with the actual cautery is practiced and is fairly sure prophylaxis against malignancy." "Pemberton reports 5,962 cases in whom the cervix had been repaired or cauterized and only five subsequently developed carcinoma. Huggins reported 2,985 cases subjected to excision by the endothermic knife and in none of these did carcinoma develop."† In speaking of lacerations we mean trauma plus irritation and infection. Infection alone without the trauma is doubtless the predisposing cause in many cases. I think then it is fair to state that a large number of cancers are due to neglected tears, and that cauterization or repair of these will prevent the development of cancer in many cases. We will have to talk and preach more for the repair of such lesions. Women must be told the value of routine pelvic examination especially after they have borne children.

Women past the menopause should be advised to have periodic pelvic examinations. If we wait for hemorrhage, the earliest and often the only danger signal, too often we are too late. I have seen patients with cervices mere shells, all honeycombed with cancer, come in within a few days after the first spotting. If getting them early means anything, we cannot wait for blood. Prevention is the role of the propagandist, the exhorter. It is here that the organizations for cancer prevention can do a great work. For their work to be effective it must not promise miracles. It must be plain, fair, rigorously honest. It must be said in words that will bear endless repetition.

THE ACTIVE TREATMENT: Now for the cases we have not prevented. There are three agents, the knife, the cautery and radium. Surgery contemplates just one thing, the removal of all the disease at an operation. Unless one believes that cancer at one time is a strictly local disease and that he has gotten the patient at that time, operation is entirely illogical except as a palliative measure. One should be able to remove all of the cancer just as one would cut the rotten spot out of an apple. When the last stitch is tied so far as surgery is concerned we have cured them or we have not,—that is all there is to it.

Many of you here remember the lectures of Dr. Hugh M. Taylor on surgery. With what gusto he quoted some leading light of that day, "Cut wide, cut deep, cut in the ebb tide of the lymphatics." You have got to cut deep to do a complete hysterectomy, and you can cut as wide as you please until you get down to the cervix where the disease is, and there the bladder in front, the rectum behind, and the ureters on either side just crimp your style woefully. Now for following the ebb tide of the lymphatics. It's a good sentence, a dramatic sentence, it has stuck in my ears thirty-five years and that's a good test, but I wonder what surgeons two generations hence will think of us with our big instruments, our bigger hands and poor inadequate eyes seriously attempting to follow those intricate microscopic spaces and trying to salvage the ultra-visible cancerous flotsam and jetsam left by the lymphatic tide!

The cautery, and I mean the hot iron, does what surgery does, that is removes the disease, but it also does what surgery does not do. It seals the lymphatics and blood vessels and sets up a terrific reaction for a greater or less area in the neighborhood of the growth, a local leucocytosis, what we believe to be a protective tissue reaction. Byrne taught us the value of the cautery and later Percy elaborated on it and made of the cautery operation

*Surgery, Gynecology and Obstetrics, 52: 249, February, 1931.
†Annals of Surgery, 94: 445, September, 1931.

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a more definite surgical procedure. Had they treated all cases instead of just the advanced or inoperable ones their end results would have doubtless been more impressive.

Radium causes a slow destruction of the cancer cells at the point of application and affects profoundly the neighboring structures around a growth. It produces tissue reactions far more profound than does heat, for under its influence alone large masses of cancer tissue have been observed to melt away, and organs distorted by new growths return to their natural shape and size.

Only about six to eight in 100 cases as they come to us now are early enough for a radical operation with a reasonable hope of a good result. Personally, I shall treat these six or eight cases with a combination of the cautery and radium instead of hysterectomy. This group may lie in controversial ground, so it is to the other ninety-two to ninety-four cases that we now turn our attention. Dr. S. W. Budd and I have been working in close cooperation in these cases and many of the older ones were done by him. We first get a specimen of the growth for microscopic examination. This is examined and graded according to Broders. I have seen one case of tuberculosis, two cases of malignant granuloma, and one of simple adenoma excluded this way. Such errors if not detected would help one's statistics wonderfully, for they all get well.

We use the actual cautery for two reasons, to completely destroy the growth when possible, to seal lymphatics and blood vessels, and to provoke what we believe to be a helpful tissue reaction. When possible we do a cautery amputation. If there is a large mass of new growth, we remove as much of it as possible with the cautery, to get its bulk out of the way so that the radium can work higher up in tissue less deeply invaded. We give a general anesthetic the first time because we use the cautery and also in order to make a thorough pelvic examination to exclude any possibility of inflammatory conditions, such as pus tubes. We use the element (except in certain vaginal cases) in ampules and in needles. We give at least three treatments at monthly intervals using 1200 to 1800 mg. hrs. each time. We give as many more as may seem expedient. We take a careful history, the essentials of which are incorporated on a card which makes the whole picture easy of access. We use the body weight, the hemoglobin and the red cell count in conjunction with the local condition as a standard for comparison to note improvement or lack of it.

We believe that the surgeon, instead of performing an operation, must "take a case" just like the orthodontist or the orthopedist and either in close liaison with the family physician or alone see it through. It is bitter, pitiable, heart breaking work but some one has got to do it. We have tried in addition to studying the cancer to learn all we can about the patient who has the cancer, something about her social condition and her environment, something that might help in putting her in a group.

As to the local condition, we divide them into four classes which we designate A, B, C, D, and very similar to the classification used by the American College of Surgeons. Broders' typing has not helped us; both Grades II and III are better than Grade I. As to classification, A is but little better than C, B beats A by eleven points, all of the D's are dead, at least they run true to form. From these statements (a brief summary of the appended

Total number of patients studied	100
Number graded	33
Number classified	87

TABLE 1

	Dead	*Living*	*Total*	*Per Cent Living*
No. graded	14	19	33	
Grade I.	2	1	3	33%
Grade II.	3	7	10	70%
Grade III.	8	11	19	58%
Grade IV.	1	0	1	All dead

TABLE 2

	Dead	*Living*	*Total*	*Per Cent Living*
No. classified	47	40	87	
Class A	3	4	7	57%
Class B	6	13	19	68%
Class C	29	23	52	44%
Class D	9	0	9	All dead

TABLE 3

	Living	*Dead*
First year	12	36
Second year	4	7
Third year	3	5
Fourth year	2	2
Fifth year	5	2
Sixth year	0	1
Seventh year	1	
Eighth year	1	
Ninth year	3	
Tenth year	5	
Eleventh year	4	
Twelfth year	2	
Date of death not known		5
Total	42	58

tables) it will be seen that a study of the cancer itself and the extent to which it has become fixed upon the patient are not satisfactory bases for any conclusions. We got at times the most unexpected results, good when we least expected it, bad when we were most hopeful. Neither the kind of cancer nor the extent of invasion is enough.

We are going to study more thoroughly the arrested cases that seem well. I want to know if there are any common traits or characteristics about these people that may prove a clue to their resistance, something that would enable us to predict the outcome and to plan more intelligently and understandingly the subsequent management of that particular case. I used to think, when we had given the first full doses of radium, that we had finished, and when a break came six months, one year, or two or four years later, we were powerless to do any more. I have changed my mind about this. Some of these women by repeated timely radiations can be kept healed and comfortably at their work for years. I recall a big, handsome, blond woman with a growth filling the upper vagina, bleeding on the slightest touch. She was Grade IV and Class C. She lived five and one-half years and stayed at her work for all but the last six months. She was given in all six treatments, three after the first series, one after the first year, one after the third, and one after the fifth. The disease tended to remain local until the very end. Had she kept in closer touch, returning for further radiation at the very earliest sign of a break, I believe she would be living today. Had I been able in the beginning to identify her as one of a class who should be radiated periodically and done this, I believe she might have gone on indefinitely. She is just another example of an individual exhibiting a wonderful resistance. Whether it is expressed in terms of her sensibility to radium or a cellular self-help in resisting cancer, it amounts to the same thing. There is a key somewhere if we could only find it. Is there a group with common characteristics to which this woman belongs, something by which we could pick her out in the beginning and plan her whole course of treatment properly? That is what I believe we clinicians may be able to do if we stick doggedly enough at our task.

We have had but one death which might be attributed to the radium treatment itself. This woman was getting her second treatment. She had a severe local reaction and died suddenly of embolism of the lung six weeks after the treatment when she was believed to be safely convalescent.

Now let us turn to the results. I like the term arrested cases rather than cures. A person may truly be said to be cured of cancer when they live out their normal expectancy, die of something else, and a thorough post mortem fails to reveal any evidence of the disease. If the disease is arrested for five years we may begin to hope that it will not return at all. A glance at Table 3 will show that twenty-four of our 100 cases have passed the fifth year period and only three of these have died, two having completed their fifth year and one her sixth. How many will live out their normal expectancies I do not know. I think of them as arrested cases rather than cured cases. In my previous report in 1927, of the fifty cases in our series, seventeen had had their treatment five years or more. Of these seventeen, five, or about 29½ per cent, were still living. Today, out of one hundred cases, seventy have had their treatment five years or more. Of these seventy, twenty-two, or about 31½ per cent, are still living.

After Care: Now let us turn to the after care. If we simply tell these patients to go take douches, it saves a lot of trouble; but if we see them regularly, treat them through the speculum, help get rid of the sloughs, treat granulation tissue with the cautery or diathermy, dilate a stenosed cervix and let out retained secretions, use local applications of antiseptics, watch for bladder complications, accord pain a judicious helping, and above all give freely of helpful counsel and wise encouragement while watching for the first signs of a break, we will have done a great deal.

With all the many workers singly and in groups interested in this subject who are giving adequate treatment whether using surgery plus radium, the cautery plus radium, radium plus X-ray, or radium alone, the results run fairly parallel, somewhere in the neighborhood of thirty and seventy. It's startling, it looks like it's fixed, the cards are stacked, the house gets seventy and we take thirty. They run so close there must be a plan running all through it, if we could only get the key. We are not going to break the bank with any such system

but if we pry into every play and analyze it and set it down, with the same wheel, the same chips, and the same people playing, we may force the bank to lower the odds!

DIET IN DISEASE.*

JOHN A. REED, A. B., M. D., Washington, D. C.

Clinical Professor of Medicine and Director of the Dispensary, George Washington University Medical School.

The subject of diet in disease, of course, is too extensive even to approach conclusion, but I want to take one disease later on and show by example the present day trend of well founded principles of the dietetic management of disease, and to show that the trained nutritionist or dietitian must take a major part in the education of the public in prevention of disease, as well as the treatment in accordance with these principles.

Food, from the apple of Genesis to our modern radio jingles, has attracted the attention of mankind, I believe, more than any other subject. The religionist, moralist, economist, scientist, physician, commercialist, faddist, charlatan, and quack have spent years of endeavor in seeking truth about food or the exploitation of food for gain, as the case may be.

The mention of food or diet to the American public stimulates mental generalities. Diet to the average laymen suggests a restriction of food intake given to a fat, furious, fair, feminine individual approaching a mature age; food brings to his mind those innumerable products so cleverly advertised in our monthly magazines with the aid of the commercial artist, or broadcast on the air in the various radio programs. Only too frequently these advertised foods state that there are specific nutritional qualities inherent in them, but expressed in such general terms as to leave one in doubt. Recently I glanced through a popular monthly and quickly noted ten nationally famous food products with the following therapeutic attributes attached to them: "substantial nourishment," "cleans the blood," "tones-up the system," "wake-up food," "aid to digestion," "contains many food elements the body needs," "balanced diet," "contains vitamines," and even such statements as "endorsed by 20,000 doctors," and "standard ration of the Red Cross." Dr. Morris Fishbein, editor of the *Journal of the American Medical Association*, has said that the influence of fashion doctors, once so powerful, fades into insignificance when compared to the self-appointed dictators who tell us what to eat. The problem of educating the people seems almost insurmountable, but I feel sure that what you and other serious workers in the nutritional field are doing will show its effect. Dr. Russell M. Wilder[1] in a recent address stated that, because of the glaring promises on the part of those exploiting food, "the profession is acquiring an antipathy to the subject of diet therapy, and many physicians, even some who know better, have been goaded into the display of actual hostility. The idea that ordinary, everyday folks are in any danger of vitamin or other deficiency is ridiculed; the increasingly probable condition of mild or incipient avitaminosis is rejected before the evidence is examined; the conclusions of the serious students of nutrition are ignored, and dietitians are denounced because of their efforts to put these principles into practice. I am convinced that physicians are more guilty than dietitians for the whole-wheat craze, and, as a class, are less likely than dietitians to be aware that the vitamins and minerals in the bran and germ of the wheat are obtainable in more digestible form and in larger amounts from other foods. Whatever our opinion as to the adequacy of general American dietaries, there can be no doubt of the importance of strict attention to nutritional principles when we are confronted with conditions that require dietary restriction."

I am sure, also, notwithstanding the tremendous influence of the commercialists, the pessimism of the medical profession, the too slow progress after earnest endeavors of the nutritionists and dietitians in spreading the gospel of correct dietary, that the efforts of those engaged in sincere and proper education about food and its application in disease, as well as in health, shall be of value.

The present trend of diet in disease is towards specificity of food both qualitatively and quantitatively. The empirical prescribing of diet can no longer attain any more than the empirical administrations of medicine. Both, of necessity, must be based upon a full knowledge of the underlying disturbed function and disturbed structure, that is, basic normal and abnormal physiology and pathology of disease. For centuries dietaries have been

*Address given at the Nutritions' Conference, Eastern Area, American National Red Cross, August 20, 1931, Washington, D. C.

inaccurately applied because of a lack of this knowledge. With modern advances in the science of medicine and its many branches, the science of nutrition has been born, and is likewise, I believe, gaining impetus in the search for truth. Chemical and biological methods have been applied to the study of diet in disease until now one can no longer admonish the sick in general terms of food.

A brief review of the work done in the dietary management of disease in the past quarter of a century will serve to show how more and more specific must be our advice in regards to food for the prevention and cure of these ills. The basis of the therapeutic management of gastric or duodenal ulcer, whether surgical or medical treatment is used, is still diet. The specific dietaries of Lenhartz and Sippy form the nucleus of dietetic management. In the food deficiency diseases, the work of Stepp, Funk,[2] McCollum,[3] Goldberger,[4] and others have taught us that certain foods containing the vitamines must be supplied; while education of the public as to what foods contain these substances must come from authoritative sources as the physician and nutritionist. Epstein[5] has shown us that we cannot give a diet in general terms in the nephritides, such as those low in protein content, but rather the contrary, since those low in this constituent may very frequently increase the edema, when high protein, low fat diet may be specific in the cure of certain types of nephritis. Norman M. Keith[6] and his co-workers have so specified foods in the management of the nephritides in their meticulous work at the Mayo Clinic as to make it comparable to the dietetic regime of the diabetic.

In the treatment of the functional gastro-intestinal diseases, including constipation, every conceivable form of dietary has been used, and still is advocated, varied in kind and quantity. The so-called smooth or bland diet, discussed at length by Alvarez[7] and accepted by most American gastro-enterologists, seems to be a rather specific answer to the problems of the functional dyspeptic in dietary management.

Diet in pernicious anemia now takes precedence over the older methods of the therapeutic management. The classical work of Murphy and Minot[8] in the dieto-therapeutics of the anemias tends to place specificity of food as a modern trend.

Other diseased processes, with our ever-increasing knowledge of them, are fast becoming amenable to diet therapy. Though not as yet judged as comparable to specific foods, a vast amount of data has been accumulated to show that many diseases are influenced to an extent by certain definite dietaries. Such disorders as obesity, dental caries, tuberculosis, the arthritides, acute febrile diseases, and epilepsy are holding the attention of the experimentalists, and tend to demonstrate definite response to various forms of instituted diet. Specific dietetic instructions in the expectant mother now hold a place equivalent in importance to the periodic examination advised.

Diet in diabetes exemplifies most particularly the specific response of disease to specificity of both qualitatively and quantitatively prescribing of food. Complaint has been made that the mathematical rigidity employed in dieto-therapeutics detracts from the art and romance in the healing of sick bodies, but the more accurate and the more rigid that diet is applied in the treatment of diabetes, the more entrancing and spectacular are the results. No where in medicine today do we have any more specific response to diet or any other management of disordered physiology and metabolism than in diabetes. This disease, as you well know, is a disturbance primarily of carbohydrate metabolism with secondary disturbances in metabolism of fat and protein. A quantitative readjustment of these food constituents, guided by a few basic principles, will bring about and maintain normal physiological body activities. The diet for the diabetic must meet successfully certain requirements as any other diet, namely, the maintenance of a given weight and provisions for growth (if a child) by means of sufficient caloric value; furnishing necessary energy for required activity; and by the nature of the illness, there must be a reduction in carbohydrate intake. The caloric requirements of the body vary with weight, activity, sex, age, and height, but let us say that 1,800 calories were the average requirements for adults. This amount must then be supplied through the intake of carbohydrate, protein, and fat. Carbohydrate intake, being limited by the nature of the disease, is determined by the individual's tolerance or ability to completely metabolize it. Protein intake has minimal intake requirement of .6 of a gram to 1 gram per kilogram body weight, with a

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limited maximal intake because of the conversion of approximately 58 per cent of it into carbohydrate after ingestion. Fat intake is generally conceded to vary within definite limits of one to four grams per each gram intake of carbohydrate food. With these basic requirements clearly in mind, a dietary is founded for the diabetic. Since the discovery of insulin the carbohydrate intake may be definitely increased with a somewhat corresponding increase in both protein and fat food, but always keeping in mind the principles underlying the formation of the basic diet. When one considers the mathematical precision necessary in the evolution of the diabetic diet, scientific dietary seems to have been accomplished. The practical application of these apparent primary scientific principles in the teaching and education of the diabetic patient becomes the work of the consulting nutritionist, who, with a guiding thought of simplicity, must teach them with a language understandable to the lay public, and sufficiently acceptable to them to desire to carry out the prescribed program tending towards health.

In summary and conclusion, I have desired to show that the work of the nutritionist is approaching an accurate science, to be carried by them directly into the homes of the public, taught with precision, and substantiated by a knowledge of the underlying cause of disease and departure from normal.

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1720 *Connecticut Avenue.*

CHRONIC CERVICITIS AND ITS TREATMENT.*

J. W. HENSON, M. D., F. A. C. S., Richmond, Va.

Dating from the writings of Noeggerath in the seventh decade of the last century, endocervicitis, with or without erosion, has been the subject of numerous papers and has continued to inspire complicating views especially concerning its gravity and treatment. The authorities of today are not all in accord on these points. In spite of the interest in this subject as shown by the continued flow of papers, chronic endocervicitis is still the most common of all gynecologic diseases. Hoenig states that this condition is so widespread that it may be truthfully said that more than 50 per cent of all women who have borne children, and many of those who have not, are afflicted with some degree of chronic endocervicitis. Strachan claims that the disease is to be found in 75 or 80 per cent of parous women and in 25 per cent of nulliparae. Moench claims that endocervicitis, salpingitis and even peritonitis are sometimes found in a virgo intacta. I agree with Strachan and Moench.

One wonders if at times a lack of proper consideration of some of the salient facts regarding the minute anatomy of the uterus and adnexa is not responsible for disappointments in the treatment of chronic endocervicitis and erosion.

Certainly there should be no failure to understand these facts and their significance if they are properly considered. The corporeal mucosa lacking the complicated character of that of the cervix and being protected by the barrier of the internal os is comparatively little susceptible to infection. The cervical mucosa is covered with high columnar epithelial cells and filled with innumerable racemose glands which extend deeply, even into the fibro-muscular tissue of the cervix, and open through narrow ducts on to the mucosal surface.

Obviously this structure is susceptible to infection which, once established, remains and progresses unless radically destroyed. Leopold's description of the normal uterine lymphatic circulation remains unchallenged. The uterine lymph current may be traced from its lacunar origin in the cervical mucosa and

*Read before the Southside Virginia Medical Association, in Burkeville, Va., September 8, 1931.

corporeal mucosa through minute funnel shaped ostia, directly to the myometrium. Here it branches into an extensive capillary net, which, spreading on the perimysium, penetrates and enmeshes every bundle and fascicle of the entire uterine musculature to its subperitoneal surface, whence it drains chiefly into two main collecting channels that course parallel to the uterine and ovarian bloodvessels at the base and top of the broad ligaments and partly into the lymphatics in the utero-sacral ligaments. The lymphatic capillary network over the corpus and cervix intercommunicate.

It is this lymphatic envelopment of the perimysial sheaths and the adnexa that determines the course of an infection from the cervical mucosa, not via the uterine cavity and tubal lumina (except in the case of gonorrheal and very rarely other infections), but along the intramuscular planes of the uterine walls through the broad ligaments to the tubal walls and the ovarian tunica albuginea as an ascending lymphangitis whose pathological trail will be marked by a few or all of the following:

1. Impairment of normal uterine contractions by infiltrating the myometrial muscle sheaths, thus causing stasis of the blood circulation, with dysmenorrhoea, menorrhagia and a sensation of weight in the pelvis and probably backache from increase in size and density of the uterus.

2. A lymphangitis of the bases of the broad ligaments, producing pelvic pains, tenderness and dyspareunia.

3. Lymphangitis of the utero-sacral ligaments, adding to the pelvic discomfort and the backache.

4. Pelvic cellulitis with its accompanying pain, tenderness and more or less fixation of the uterus.

5. Salpingitis which may be limited to the exterior of the tubes resulting in adhesions, kinking and possibly closure of the abdominal ostia, producing pain and tenderness in the lower quadrants of the abdomen or the infection may invade the lumen of the tubes.

6. The lymphatic infiltrate may thicken the capsular tunic of the ovaries, impeding the normal rupture of the graafian follicles with ultimate development of retention cysts, or there may be a frank ovaritis. Diseased adnexa are at times removed when a timely and radical treatment of the original focus in the cervix might have sufficed. Infection is the determining cause of inflammations of the cervix, though trauma may and often does play the role of a predisposing factor.

Chronic endocervicitis is seldom unaccompanied by so-called erosion. The squamous cells of the portio adjoining the external os desquamate, leaving a raw surface (true erosion). This is followed by attempts at healing. The columnar cells of the endocervix proliferate and cover this raw surface. Along with this change, glands characteristic of the cervical mucous membrane are formed in the diseased area on the portio. Following this the basal cells of the squamous epithelium surrounding this area displace the columnar cells, first as a thin layer, soon proliferating and growing over the ducts of the new formed glands, or growing downward into the ducts choking them, and by these two means forming the cysts so often seen on the surface of so-called erosions. As chronic endocervicitis is so seldom unaccompanied by disease of the portio and as a multiplicity of names is confusing and since only the microscope can differentiate several of the changes occurring here, I believe that Moench is right in suggesting the term cervicitis to cover all inflammatory changes.

Without referring again to all the symptoms of chronic cervicitis and its sequelae, I beg to emphasize dysmenorrhoea, menorrhagia, lumbosacral backache and persistent leucorrhoea. Every woman with leucorrhoea should be examined through a vaginal speculum.

Hoenig, in commenting on the dysmenorrhoea, remarks that the pain is in the early phase of the menstrual period and disappears when the flow starts freely.

There are other conditions that can often be charged to the account of chronic cervicitis, one of which is of particular gravity: sterility (Sturmdorf, Hoenig, Davis, Fulkerson and others); arthritis (Rosenow, Moench, Sturmdorf and others); carcinoma of the cervix (Hoenig, Davis, Matthews, Miller, Bailey, Strachan and others).

Fulkerson, who is very conservative, made a study of a series of cases and concluded that in 21.3 per cent of the women who desired children the sterility could be charged to chronic cervicitis. Miller, also very conservative, admits that in certain cases of arthritis the sequence of cause and effect is too clear

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to be ignored. Ewing states that chronic endocervicitis precedes cancer of the cervix in the majority of cases. Mayo states that 60 per cent of the cases of cancer of the cervix is traceable to chronic endocervicitis.

In summing up the evidence against chronic cervicitis and charging the jury, I prefer to quote Miller verbatim. "It is likewise beyond dispute that any condition which can terminate as endocervicitis can, in pathology of the upper pelvis, in spontaneous post-operative and post-partum infections, or in systemic focal infections, and which has of itself the potentialities of a transition to malignancy, is not a disease to be ignored or to be regarded lightly."

The foregoing part of this paper has for its object emphasizing the seriousness of cervicitis and consequently the importance of radical and thorough treatment.

Many of the methods of treatment formerly employed have died of old age or inanition. Tampons, properly medicated, are still used to cleanse and lessen the congestion of the cervix, in preparing for the more radical measures. The methods of treatment that accomplish more or less good results are: radium, cauterization, surgery, diathermy—medical and surgical.

Radium is unsatisfactory. If sufficient irradiation is used to be certain of a permanent cure, the ovaries may be damaged.

Cauterization has given much satisfaction in the hands of many excellent surgeons. Its objections are the danger of stenosis, if the cauterization is sufficient to destroy the racemose glands, and a relapse or re-infection if all the glands are not destroyed.

Amputation of the cervix frequently fails to cure and, if done during child-bearing period, the objection to its use is obvious.

Trachelorrhaphy restores the anatonical outline of the cervix, but does not remove the infection.

I never saw chronic cervicitis permanently cured until Sturmdorf perfected and published his operation of removing a cone-shaped piece of tissue from the cervix, the base of the cone including the inflamed glands around the external os, the tip of the cone reaching to the internal os, thus removing not only the area of the so-called erosion, but the racemose glands in the cervical canal.

Medical diathermy has a very limited usefulness here. It may cure uncomplicate i gonorrhoeal endocervicitis, but how many cases are cured before mixed infection is established? When mixed infection is established, medical diathermy is impotent.

A permanent cure of chronic cervicitis can only be attained by removing not only all visible diseased tissue, but the entire racemose gland bearing area surrounding the cervical canal.

The Sturmdorf operation involves hospitalization and considerable expense. Surgical diathermy can accomplish the same result without a general anaesthetic, with much less expense and usually with no confinement to the house.

Five years ago I began the practice of destroying by electro-coagulation, a more or less cone shaped piece of tissue in the cervix, the base being the diseased area around the external os and the apex approaching the internal os. At first the technique was more or less imperfect, and two or three treatments were required at intervals of three or four weeks before a cure was effected.

Now, one treatment is frequently sufficient. A second treatment is sometimes required to destroy the upper end of the gland bearing area. Not infrequently a second treatment is given solely to destroy more of the cervical tissue in the case of a large cervix, thus reducing the weight of the uterus. The indifferent electrode I use is one constructed for me. It has a copper core 9 inches long insulated by vulcanite. At one end provision is made for connection with a cord from the diathermy outfit. Attached to the other end is a piece of copper 1x3/8x3/16 inches, curved on the flat so it will fit in the utero-vaginal sulcus. The principle involved is borrowed from Doane's indifferent electrode used in his tonsil work.

One may use as an active electrode, any of the several made for tonsil electro-coagulation, provided the needle has a diameter of not more than 1/16 inch and not less than 1/32 inch, and also provided that it is insulated to within ¾ inch of its point.

After exposing and cleansing the cervix and its canal, the direction of the latter should be ascertained by a probe. The cervix and the canal should be anaesthetized by novocaine 2 per cent or nupercaine 1 to 500 applied on cotton, which should be left in place for ten minutes.

Plate 1 illustrates (A) how the needle is introduced at various points around the external os, and (B) pushed inward in such direction as to approach the canal near the internal os. The distance of the needle puncture from the margin of the external os must be determined by the size of the diseased area around the os.

When there is little pathology beyond the external os, the needle may be entered about 1/16 inch external to it and pushed in almost parallel to the canal. The needle should not be introduced near the outer border of the diseased area as a rule because, by so doing, the coagulation would extend outward further than necessary unless the cervix is very large. The distance that each path of the needle should be from its neighbor, in order to properly coagulate a cone of tissue, can only be learned by observation and experience.

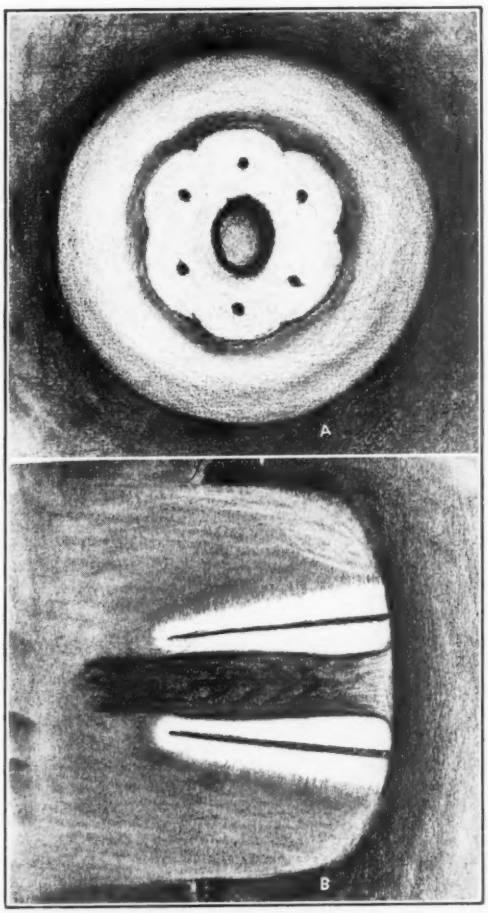

Plate 1 (Magnified).

The controls of the diathermy outfit should be adjusted so that the current will not cause rapid desiccation or charring of the tissue, thus stopping the progress of the needle. The latter should go in smoothly and quickly, requiring only two or three seconds. The needle should not be forced in for, if this is done, its direction may be altered and damage may result. While the dead tissue is being detached, the squamous epithelial cells of the portio proliferate and extend up into and finally form the lining of the new cervical canal.

Occasionally a small piece of the dead tissue becomes detached prematurely, causing bleeding, which may be persistent for a day or two. This alarms the patient unless prepared for it. She should be warned at the time of the treatment that this bleeding may occur and urged to come to the surgeon's office at the earliest hour possible after its occurrence. The offending point can be easily located and the bleeding stopped by touching the spot with a crystal or stick of silver nitrate or applying a well diluted Monsel's solution on a small pledget of cotton. The patient should be advised regarding the odor accompanying the disintegration of the coagulated tissue. This disagreeable feature can be very much minimized if not entirely avoided. The surgeon should apply hydrogen peroxide or perborate of sodium two or three times a week and the patient should use, once or twice daily, cleansing douches, being instructed to introduce the douche tip carefully otherwise bleeding may be started by prematurely detaching a piece of coagulated tissue.

I have never seen stenosis follow this plan of treating cervicitis. The resulting cervical canal and external os are usually about normal in size. To the palpating finger there is no evidence of scar tissue. A dogmatic statement that patients who become pregnant after this treatment are free, at the time of delivery, from any complications that may be charged to it would be premature in view of the limited number of post-treatment pregnancies on which I have been able to check. As the results have been uniformly satisfactory and as several cases cited in detail would make this paper too cumbrous, the author presents just two illustrations, each demon-

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strating a distinct type of cervical pathology with result of treatment.

Plate 2 shows gonorrhoeal cervicitis with mixed infection and real erosion in a young

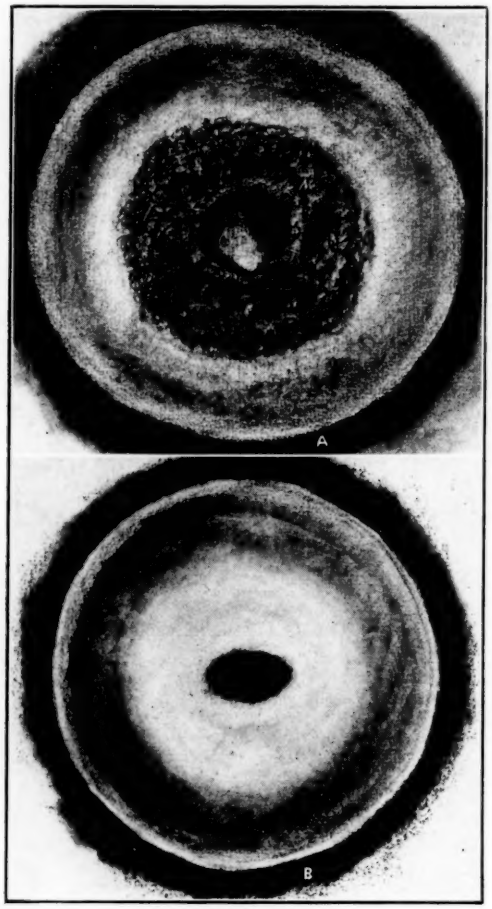

Plate 2 (Magnified).

nullipara—(A) before treatment; (B) five weeks after one treatment, and at the present time. The patient was treated November 18, 1928.

Plate 3 shows cervicitis with multiple lacerations and numerous cysts in a field of so-called erosion—(A) before treatment; (B) five and one-half weeks after second treatment, and at the present time. This woman, a multipara, thirty-eight years old was treated on October 10, 1927.

As demonstrated in Plate 3, electro-coagulation enables one to take care of the irregularities on the cervix resulting from tears. Surgical diathermy for cervicitis was first used by Doyen in 1908. I do not know his technique.

Several American surgeons are using electro-

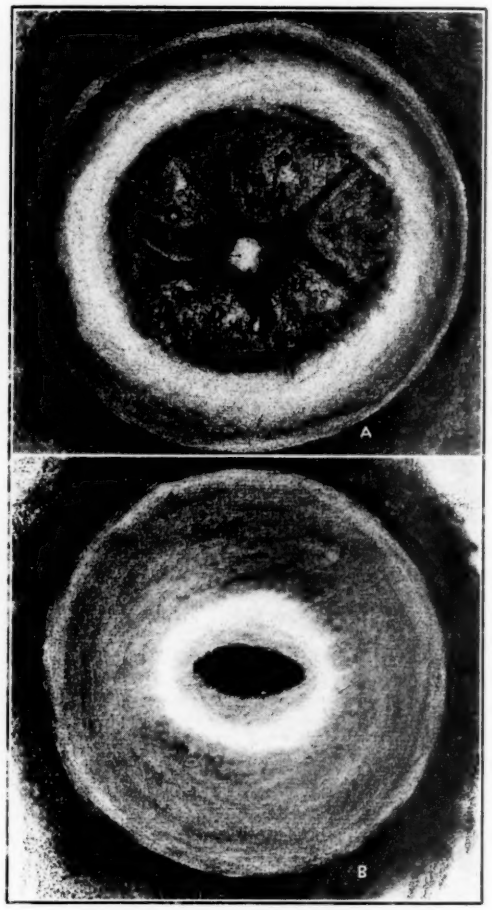

Plate 3 (Magnified).

coagulation in cervicitis. It does not seem to me that any, whose papers I have read, employ a technique that is sufficiently radical, except Mikels.

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412 *Medical Arts Building.*

TOTAL RUPTURE OF THE KIDNEY: REPORT OF CASES.*

W. CALHOUN STIRLING, M. D., F. A. C. S.,
Washington, D. C.

Associate Professor Genito-Urinary Surgery, Georgetown University School of Medicine.

Prior to the advent of the automobile, injuries to the kidney were very uncommon. This is shown by necropsy reports, one series of over seven thousand autopsies showing only seven cases. However, since automobile accidents have become so numerous, more cases of ruptured kidney are being reported all the time. As the general practitioner usually sees these cases first, it is the purpose of this paper briefly to refresh your minds on the diagnosis and treatment.

The causative agents in rupture of the kidney may be classified as follows:

1. Those due to direct trauma, i. e., stab wounds, gun shot and other puncture wounds. This type of injury is rare.

2. Injuries from indirect force applied to the kidney region resulting in injury to that organ from contact with the vertebrae or ribs. This is the type of injury most often seen.

3. Muscular over-exertion, as in lifting or straining, has been reported as producing rupture of the kidney. This type probably had a pre-existing renal lesion.

4. Hydrostatic or spontaneous rupture of the kidney pelvis from over-distention durin pyelograms or as a result of previous disease. This type is also uncommon.

The majority of cases reported have been in men, due to the larger field of activity of this sex. The right kidney is the one most frequently injured, due to the liver limiting its mobility. The kidneys, as well as other vital organs, are well protected by the bony encasement of the body; however, it is this protective bony framework that often produces the most damage to the kidney by having the kidney caught between the ribs and vertebrae. In one of the cases herein reported the kidney was completely torn into two parts by the fractured vertebral process. The kidney is more subject to injury than are the liver and spleen. The extent of the kidney injury may or may not depend on the amount of force and the manner in which it is applied, though cases are reported in which the trauma was very slight. The injury varies from a slight contusion to complete pulping of the kidney. True rupture of the kidney indicates that the pelvis has been involved and presents a grave picture. The rupture may assume a stellate appearance conforming to the embryonic lines of the kidney. One or both poles may be torn off and such injury requires a nephrectomy. In this study of five cases two were contusions or mild lacerations of the kidney, two complete rupture and the fifth a subcapsular hemorrhage. As a result of the hematoma produced from the torn vessel, a tumor forms in the perirenal area posterior to the peritoneum. This mass varies in size and may become infected, producing a perinephritic abscess. Several cases have been reported in which the peritoneum shared in the injury with fatal results.

The *symptoms* associated with this condition are shock, localized pain in the affected side, hematuria, tumor formation in the flank, renal ileus and rigidity of the muscles on the injured side. Bloody urine is the finding most frequently seen, occurring in about 95 per cent of the cases reported. If the ureter is torn across or obstructed by blood clots, hematuria may be absent. In the presence of frank rupture of the kidney, the absence of tumor formation should make one think of rupture of the peritoneum with the escape of blood into the peritoneal cavity. The pulse is usually fast and often thready, the skin cold and clammy, with an early subnormal temperature, which later becomes very high if infection occurs in the blood tumor.

Complications are often seen as a result of these accidents as one or more ribs may be fractured at the time of the injury and driven into the renal tissue. Among the other complications may be mentioned rupture of the liver, spleen and pleura. Hydronephrosis and movable kidney have been reported as not infrequent complications of this condition.

The *diagnosis* can usually be made from the history, a careful physical examination, X-ray

*Read by invitation before the Maryland, Virginia and District of Columbia Medical Society, Washington, D. C., November, 1931.

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and urinary findings. In the absence of a tumor mass and localized pain, a cystoscopic examination should be made, if the condition of the patient will permit it. By this method the source of the bleeding and the condition of the kidney can be determined. A retrograde pyelogram may be necessary to determine the exact pathology if bleeding is the only symptom present. Intravenous urography lends itself very well to the diagnosis of this condition, probably even better than the retrograde method, though of course it is contraindicated if the patient's condition is very critical. After two or three days the usual signs of sepsis may be seen if the renal pelvis is involved and infection of the hematoma occurs.

The *treatment* of rupture of the kidney may be divided into expectant and operative. The mortality in the cases treated by non-surgical measures is over 20 per cent. The treatment is determined by the amount of shock, pain and bleeding present. Conservatism should be practiced if the patient's condition warrants it. The temperature, pulse, blood pressure, red blood count and general condition determine whether or not operative interference is indicated. On exposure of the kidney one decides whether or not a nephrectomy must be done. In one of the cases herein reported the kidney was ruptured, but by packing the rent with gauze the bleeding was controlled so the kidney was not removed. In the other case the kidney was so badly destroyed and the pedicle torn that nephrectomy was required. If there is any suspicion of injury to the peritoneum, prompt exploration is indicated. Shock and loss of blood should be vigorously combated by a transfusion, hypodermoclyses and other supportive measures.

Case Report: L. J., age 34 years, adult, male, was admitted to the hospital November 20, 1929, at 12:45 P. M. *Chief complaint:* Pain in both wrists, back and abdomen with blood in the urine. *Past history:* Irrelevant. *Present history:* On the night of November 19, 1929, while walking through a building under construction, patient fell down an elevator shaft (about twelve feet) and landed on his feet with the body in extreme flexion. He was dazed at first and then managed to get to the street where he hailed a taxi and was brought to the hospital. On admission his pulse was 96; temperature, 99.8; systolic pressure, 106; diastolic, 62. He was in moderate shock. Dr. Claud was called to see him and made a diagnosis of bilateral Colles's fracture with possible internal injury. He was sent to X-ray and it was found that he had a fracture of both wrists. These were reduced by Dr. Claud under the fluoroscope. The transverse processes of the second, third and fourth lumbar vertebrae on the right were also fractured and an incomplete one of the third lumbar vertebrae on the left. There was some separation of the fragments of the second and fourth vertebrae on the right. The eleventh and twelfth ribs on the right side were also fractured.

Urinalysis at this time showed a large amount of blood, many leucocytes and epithelial cells. The blood count showed 15,000, leucocytes, 91 per cent polymorphonuclears, 9 per cent lymphocytes. The hemoglobin was 81 per cent, with 4,300,000 red cells. Severe pain was experienced in the right side and the presence of a gradually enlarging hematoma was noted. He was given 1,000 c.c. of normal saline solution by hypodermoclysis and other supportive treatment at this time. He was nauseated and vomited clear fluid several times. The mass in the right side continued to enlarge and there was a gradual drop in the blood pressure to 90 systolic. After a consultation the diagnosis was made of rupture of the right kidney and an immediate exploratory operation was decided upon. On exposure of the right kidney area a large hematoma was seen filling the entire right flank. A large mass of blood clots was evacuated, and on exposure of the kidney the upper pole was found to be completely torn off from the lower pole and pedicle. This was lifted out and the remainder of the macerated kidney removed. The patient was discharged from the hospital two weeks later with the kidney incision healed.

Case Report No. 2: N. W., colored, male, adult, aged 18. *Previous history:* negative. Twelve hours previous to examination he was struck in the left side by a rock, which knocked him to the ground. He was able to crawl home slowly after a short time and suffered severe pain in the left side, accompanied by the passage of bloody urine. He gradually became weaker, with persistent hematuria. On entrance, his temperature, pulse and respiration were 97-110-26, respectively. He was in marked shock, pulse weak and rapid. A cystoscopy

was done and catheters passed to each kidney. Bloody urine was obtained from the left side, while the right side was normal. An intravenous phthalein test showed the left kidney returned 50 per cent of the dye in fifteen minutes, with a normal excretion on the right. The blood count was 15,000 white cells, chiefly polymorphonuclear leucocytes. A large tumor was palpable in the left flank, very tender on palpation. An exploratory operation was done under ether anesthesia. On exposing the left kidney region, many blood clots were encountered, which were sponged out, revealing a large tear in the lower pole of the kidney, extending into the pelvis. The rent was approximated with mattress sutures and the site of rupture packed with gauze. The bleeding was thus controlled and the kidney space closed. He recovered rapidly and was discharged cured, four weeks later. The urine was normal and the patient felt well.

Summary

1. Traumatic injuries of the kidney are relatively infrequent as compared with injuries in other parts of the body. The relative proportion is approximately 1 to 1000.

2. A prompt and thorough examination, including cystoscopy, should be done in all cases, where injury to the kidney is suspected, in order to lower the mortality and reduce complications to a minimum.

3. Hematuria is the sign seen oftenest, though one or more of the classical signs may be absent.

4. The amount of trauma may bear no relationship to the extent of the injury, as complete rupture of the kidney has been known to follow simple injuries.

5. Complications include: Injury to the peritoneum, with rupture of the liver, spleen and, in many instances, fracture of one or more ribs.

6. In cases where one or both poles of the kidney are torn off, nephrectomy should be done to prevent exsanguination. General supportive treatment, including blood transfusion, is of much help in combating the shock.

7. Early exploration, with conservative surgery, offers the patient the best chance of recovery. This includes suture of the torn kidney, packing if needed for hemorrhage, together with drainage. The mortality where this has been done is low.

1835 *Eye Street, Northwest.*

HUNGER PAIN SYNDROME OF FUNCTIONAL ORIGIN AND ITS TREATMENT.*

WM. H. HIGGINS, M. D., Richmond, Va.

An effort was made several years ago by the author to determine the relative frequency of the hunger pain syndrome in a series of gastrointestinal and gall-bladder cases which had been operated upon at St. Elizabeth's Hospital. This analysis[1] of 160 consecutive clinical histories comprised forty-six cases of peptic ulcer, thirty-three of chronic cholecystitis, forty-seven of chronic appendicitis and thirty-four of combined chronic cholecystitis and appendicitis, all of which represented patients whose diagnosis had been verified at operation. In this study it was found that there was a definite history of food relief in 15.4 per cent of the chronic cholecystitis group, 17.5 per cent of those having chronic appendicitis, and 50 per cent of the peptic ulcer type. The age of the patient, duration of the illness, percentage of hydrochloric acid or roentgenologic studies apparently bore no relation to the incidence of this complaint.

This analysis of our own cases convinced us of the necessity of a more detailed study of all patients exhibiting this syndrome and gave us clearer indications for operative intervention. Since these results were published, the writer has been interested in another group in which hunger pains have been the predominating complaint. A typical history is as follows:

Case 1.—A physician, age 46, consulted us two years ago on account of epigastric pain. His present illness began several months previously, following a long period of intensive work. His abdominal discomfort was always aggravated by difficult consultation or mental strain, but was invariably relieved by food.

This cycle of events continued until he was eating practically every hour, in order to be able to continue his duties. He described his pain as being not only epigastric in location but there was also a diffuse abdominal cramp of considerable severity.

His physical examination was essentially negative throughout. There was no muscular rigidity but slight tenderness over the epigastrium.

Gastric analysis showed a definite hyper-

*Read by title before the sixty-second annual meeting of the Medical Society of Virginia, at Roanoke, October 6-8, 1931.

chlorhydria but no occult blood was present. Cholecystogram was normal and repeated roentgenologic studies of his gastro-intestinal tract were negative with the exception of a pyloro-spasm and adherent appendix. A chronic obliterative appendix was removed, but for one year after the operation the same symptoms recurred whenever the patient was subjected to any unusual emotional strain. After general reconstructive measures referred to in another paragraph were adopted his digestive symptoms disappeared and he is now free of pain.

Case 2.—A man, age 33, was operated upon in 1927 for suspected ulcer because of his history of acute recurring abdominal pain, but only a chronically diseased appendix was found. His symptoms continued and he consulted us in September, 1930. At that time his examinations were negative with the exception of tenderness in his epigastrium and a hyperchlorhydria. Under medical regime he made an uneventful recovery and has continued well.

Case 3.—A tobacconist, age 39, gave a history of stomach trouble for ten years before presenting himself for examination in August, 1930. His chief complaint was epigastric pain recurring in the early morning hours or after mental fatigue, and was relieved by food or alkali. His office hours had been long and arduous with little opportunity for relaxation or exercise. During the past six months radical changes had been made in his business, which was a decidedly disturbing factor. His examinations were essentially negative except a hyperchlorhydria and a spastic pylorus. Following a change in his diet and daily regime and the administration of sedatives, he has made a satisfactory recovery.

Case 4.—A physician, age 38, began having hunger pains in September, 1930. Worry of any type produced epigastric pains which were relieved by food or soda. Complete physical examinations and laboratory studies were negative except an excessive amount of free HCl in his stomach and an irritable pylorus as demonstrated by roentgenological examination. For the last six months he has been symptom free and is apparently well.

This group of cases is presented to illustrate a type of hunger pain which closely simulates the ulcer syndrome, but apparently has no organic basis and is a distinct clinical entity. Its prognosis is different and its therapeusis calls for certain specific recommendations. The need for this differentiation is not purely an academic one, but its recognition places upon the physician a genuine responsibility. On the one hand, there is an imbalance of the vegetative nervous system with pressor preponderance and its attendant local and systemic disturbances. To this type of patient any operative procedure or even a prolonged ulcer diet would tend to aggravate rather than relieve his symptoms. On the other hand, a reversal of the treatment following an erroneous diagnosis is fraught with obvious consequences.

To what extent these two diseases are similar from a physiological standpoint may be surmised from the under-lying mechanism of hunger pains. For many years Haller's theory of the mechanical stimulation of the sensory nerves in the gastric mucosa was generally accepted. Even Pawlov supported this idea and based his assumption on the effect of wine as a hunger excitant. Subsequently, however, Carlson[2] demonstrated that the contractions in an empty stomach give rise to a sensation of hunger by stimulation of the sensory nerves not in the gastric mucosa but in the submucosa, and that the periods of contractions in the empty stomach are synchronous with the hunger pangs. Ordinarily the normal individual does not experience a definite discomfort when the stomach is empty but under varying conditions this sensation does develop into an actual pain.

Hughson[3] has shown that hyperperistalsis and pyloro-spasm may result not only from intra-gastric lesions but an irritation anywhere in the peritoneum will produce the same picture. He considers this due to the fact that there is a reflex arc of which the vagus nerve constitutes a part and impulses are carried through this reflex to produce a spasm of the pyloric sphincter and consequent delayed emptying of the stomach even though the gastric peristalsis may be stimulated.

The clinical application of Hughson's studies is that ulcer symptoms are due not infrequently not so much to the local effect of the lesion but to its influence on the reflexes governing the tonus of the pyloric end of the stomach. In those individuals whose nervous mechanism has become unstabilized by environmental factors, it is reasonable to believe that there is a

hyper-irritability of the reflex arc producing an effect similar to an organic lesion. We are familiar with a patellar clonus and other exaggerated nervous phenomena which not uncommonly have a functional background and are not always indicative of tissue changes. Following the pyloro-spasm there develops a gastric retention which in itself produces the hyperchlorhydria with its attendant symptoms. It is now known from experimental observations that when there is an obstruction of the pyloric end of the stomach either from an organic stricture or spasm, the prolongation of the contact of the food with the gastric mucosa causes the hyperacidity and is not the result of it.

The recognition of this pseudo-ulcer syndrome is important not only for prognosis but also for a proper therapeutic program. Such patients should be viewed as a whole and not only from the gastro-intestinal standpoint. A daily regime should be worked out for them including recreational as well as avocational innovations. In addition to a readjustment of the patient's attitude toward his daily problems, it is essential that the emptying time of the stomach should be increased by dietary and medicinal measures. Foods of high protein content and excessive condiments should be avoided, but strict ulcer diets do not seem to be necessary provided intermediate feedings are taken. Belladonna is a most valuable agent in overcoming the pyloro-spasm and, of the different preparations, bellodenal apparently gives the most sustained effect and satisfactory result. In addition to its active constituent bellafoline, it contains a moderate amount of luminal which adds to its efficacy. In some instances alkalis are helpful.

The discussion of this syndrome was provoked by the current impression that hunger pains are indicative of ulcer. Text books and many teachers in our medical schools are largely responsible for this half truth. In an effort to simplify diagnostic procedures, there has been a tendency to over-emphasize certain so-called classical signs or rule of thumb aids in the study of disease processes. For teaching purposes we are prone to dogmatize in the recognition of pathologic states and students are apt to carry over into actual practice some of these fallacies which we so frequently meet. It should be remembered that individuals vary widely in their response to the same physical handicaps, be it organic or functional, and no one symptom is always typical of any specific disease. As a matter of fact, it may be definitely stated that whenever a physical sign or symptom is classified as pathognomonic of a disease, it at once becomes a diagnostic pitfall.

Repeated emphasis should be given to the fact that hunger pains do not necessarily indicate ulcer but may be caused by any one of several organic lesions in the abdomen or may be a manifestation of a conditioned reflex of functional origin. By a more careful survey of patients giving ulcer-like histories a more intelligent therapeutic regime can be established.

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Medical Arts Building.

GENERAL AND FOCAL SIGNS OF INTRACRANIAL TUMORS.*

THOMAS N. SPESSARD, M. D., Roanoke, Va.

The subject of this paper was chosen, in spite of the possible danger that I would deal with a topic with which all of you were already far too familiar. However, I believe that, whether the physician is in general medicine or a specialty, an occasional brief review of the fundamental symptoms and signs found in intracranial tumors is helpful. Intracranial tumors all too frequently simulate other systemic lesions and, unless borne in mind, are frequently overlooked. If this discussion does nothing further than stimulate our diagnostic interest in intracranial tumors it will have served its object.

It is not the purpose of this paper to discuss in detail, either the physiology or the anatomy of the brain, but only to remind you that the brain is a highly specialized organ, whose functions depend on various centers, each center carefully joined to the other by association fibers; thus impairment of one center not infrequently calls for associated symptoms referable to another; each expanding intracranial lesion, therefore, shows not only

*Read before the Southwestern Virginia Medical Society at its meeting in Marion, September 24 and 25, 1931.

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general but focal signs. Whether the general or focal signs appear first depends entirely on the character and location of lesion; if the primary site of the tumor is near one of the cerebral centers, such as the motor, speech or sensory area, the focal signs appear very early, in spite of the fact that the lesion might be too small to initiate any general symptoms. However, if the primary site of the lesion is in the so-called, "Silent Areas," the general signs may be marked and definite for some months before a focal sign can be obtained. It is, however, the symptoms and not the signs of the intracranial lesion that bring the patient to us, and of all types of conditions from which man must suffer there is none in which the history is of more importance or more helpful than in intracranial tumors.

Headache is usually the first sign of increasing intracranial pressure and occurs at some period in intracranial tumors in well over 80 per cent of all cases. The character of this headache is variously described. In general it is dull, diffuse, and throbbing; it is usually constant but occasionally disappears for several weeks or months only to occur with increased intensity. It is frequently made worse by rapid motion of the head and in tumors of the posterior cranial fossa is often accompanied by a slight stiffness of the neck, leading us not infrequently to the belief that we are dealing with an inflammatory process, which is easily disapproved by the history and laboratory findings. The location of the headaches was formerly felt to be of great localizing value, but as more and more cases come to operation and as other more accurate methods of localizing lesions have been invoked, the general feeling today is that the location of the headaches is of little significance other than as a sign of an increasing intracranial pressure.

Vomiting is the second most frequent symptom of expanding intracranial lesions. It occurs in close to 60 per cent of all brain tumors, sometime during the course of the disease. It usually follows the appearance of headaches by a period of several weeks or months, depending on how rapidly the intracranial pathology is progressing, and frequently relieves the headaches temporarily. Vomiting in expanding intracranial lesions is rarely of the projectile type; in fact, in only eleven out of a hundred verified cases of brain tumor were Bowman and Smith able to elicit this symptom. My own observation has been that projectile vomiting occurs much more frequently in acute intracranial conditions, such as cerebral edema following concussion than it does in the slowly expanding type in which the cerebral fluid circulation has an opportunity to adjust itself to the pressure increase. One of the characteristics of the vomiting found in brain tumors is that it frequently occurs without nausea; its occurrence is irrelevant to meals or what has been eaten, and there is usually no gastric distress.

Visual Disturbance is a third most common symptom and coupled with headache and vomiting is a triad of symptoms that should immediately arouse suspicion of intracranial pathology. Visual disturbance is not infrequently the first symptom of brain tumor, especially if the lesion is pressing directly on the optic nerves as in pituitary tumors; usually, however, visual disturbance is a rather late symptom and has been preceded by a period of headache and vomiting. The disturbance noted is more often a result of general increased pressure with the resultant choked disc giving us constriction of the fields, increase in size of the blind spots, with occasional subjective phenomena, as light flashing before the eyes or a feeling of pressure on the eyeballs. At times bitemporal or homonymous hemianopsia is noted which is of localizing significance. True, visual hallucinations are rare but occasionally occur—in only one out of a series of a hundred cases did Bowman encounter this symptom.

Mental Disturbance is another symptom that should lead to a careful study for intracranial tumors as it occurs in from 35 to 40 per cent of all brain tumor patients. It is sometimes the initial symptom and may manifest itself as impairment of memory, drowsiness, disorientation or childishness. Impairment of insight and judgment is frequently seen and in some cases a complete change of personality results. The timid may become boisterous, the good natured quarrelsome or irritable, the cheerful may become depressed. This rapid mental change frequently leads to erroneous diagnosis of general paresis but this is readily corrected by clinical and spinal fluid examinations. The general consensus of opinion is that mental disturbance occurs earlier and is more marked in lesions of the

frontal lobes, especially the left, as this portion of the brain is that more recently acquired by man and is the center for higher intellectual thought. The mental disturbance is not characteristic in itself, but is another link in the chain leading to proper diagnosis.

Convulsive Seizures are found in practically the same proportion of intracranial tumors as are mental disturbances. The incidence is somewhat smaller according to Parker, but in any case well over 20 per cent of brain tumor cases show this symptoms. The onset of convulsive seizures in any patient beginning after adult life should lead us to suspect brain tumor. The seizures may be generalized, but the large percentage are of the Jacksonian type involving primarily one side or one extremity, sometimes being so mild that there is only a transient feeling of numbness and weakness of a hand or foot. After a short period, however, as more cerebral motor centers become involved, what was at the beginning of focal convulsion soon develops all the characteristics of a generalized seizure. A Jacksonian convulsion is of great localizing value anl shows definite irritation or pressure upon or near the contralateral motor area of the cortex. It is both a general and a focal sign. All epileptics should have expanding intracranial pathology ruled out before a diagnosis of idiopathic epilepsy is made. The neurosurgical staff at the Neurological Institute of New York were so impressed by their frequent finding of surgical intracranial conditions in epileptics that an encephalography is done routinely on all cases of epilepsy admitted to their service.

Dizziness is complained of by about 25 per cent of all brain tumor cases. It is found more frequently in lesions of the cerebellum or posterior cranial fossa, and indicates a lesion along the vestibulo-cerebellar pathways. It is not always a general sign of increased intracranial pressure, as cases with other signs of markedly increased pressure fail to complain of dizziness; however, it should be solicited carefully in any brain tumor suspect, especially as to the type and direction the dizziness is toward. We are familiar with the fact that patients with cerebellar lesions frequently fall toward the side of the lesion.

Blood Pressure and Pulse Readings are of little significance in intracranial tumors. They are, of course, of great moment in acute intracranial conditions such as hemorrhage or fracture but in slowly progressive intracranial pathology they are of no diagnostic aid.

Focal Signs: When the diagnosis of an expanding intra-cranial lesion has been made from the general signs and symptoms enumerated above, it then becomes encumbent upon us to localize the area of the brain in which the pathology is situated. This is frequently difficult and certain cases, even with the closest study, will fail to yield any evidence as to the exact location of the growth. In spite of the fact that one large neurosurgical clinic in this country claims that all brain tumors are localizable, my observation has been that neurosurgeons just as general surgeons have their proportion of negative explorations. Even with the improved technique of air injections with careful X-ray studies, errors of localization are made and will continue to be made at times in spite of every effort to the contrary.

While it is obviously impossible to consider all the focal signs of intracranial tumors in one paper, I will enumerate and discuss briefly the signs found more commonly. I consider hemiparesis the most common localizing sign of brain tumor. It is true that this does not localize the pathology definitely, but is often the first localizing clue to be elicited. The hemiparesis may be so mild that there is simply a slight exaggeration of the deep reflexes on the side contralateral to the lesion with a proportionate diminution of the superficial reflexes on the same side, that is, exaggeration of the ankle and knee jerks with loss or an inequality of the abdominals and cremasteric reflexes. There may be a slight loss of muscle strength present as shown by a weakened grip or a very slight tendency to foot drop. The Babinski reflex is commonly found with its confirmatories on the paretic side but is usually a late sign and is preceded by the other reflex changes, i. e. the exaggeration of the knee and ankle jerks and the diminished abdominals appearing earlier. When the Babinski is present it is, of course, very valuable and unmistakable. Facial weakness is also found on the paretic side and is of great value as a localizing sign. The weakness is on the side opposite the lesion.

The next most frequent localizing sign is the appearance of sensory phenomena. The signs of sensory disturbance occur as do those of the motor disturbance, on the side opposite the lesion and hemihypesthesia or hemianes-

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thesia is the most common finding. The sensory impairment or loss extends as a rule from the forehead to the toes, giving sensory involvement to one-half the body, stopping almost exactly in midline. In cortical or sub-cortical lesions all forms of sensation are involved, heat and cold, pain, temperature, vibratory and position sense. Astereognosis is frequently found in which objects placed in the hand opposite the lesion cannot be identified by handling. This sign is indicative of parietal lobe involvement but is rarely found alone. The disturbances of sensation as mentioned above are earlier in appearance in lesions found subcortically in the area of the thalamus. Aphasia is another common and valuable focal sign and may be either partial or complete, motor or sensory. A combination of the two, that is, a mixed aphasia is the more common. This sign, of course, indicates temporal lobe involvement on the left side in right-handed individuals.

The motor and sensory changes mentioned above point to pathology in the cerebral cortex in the first and second cranial fossa. Tumors within the third cranial fossa give an entirely different group of signs. Here, beneath the tentorium, rest the cerebellum with the brain stem. Tumors of this region give more definite localizing signs than those further forward. Incoordination, ataxia, and dysergia are characteristic of cerebellar pathology as indicated by the Romberg sign, unsteadiness in walking, tremor and dysmetria in the finger to finger and finger to nose tests. The ataxia and incoordination are more marked on the side of the lesion in cerebellar pathology as are all the other signs, which is just the opposite to the condition found in cerebral lesions where the signs are on the opposite side. Unsteadiness in gait with the general signs of an intracranial tumor should at once arouse suspicion as to cerebellar pathology. Rapidly progressing deafness with unexplained tinnitus also points to lesions in this region, and with other signs of cerebellar tumor frequently indicates an expanding lesion of the cerebello pontine angle. Tumors found in this position are usually neuroma of the acoustic nerve.

Besides the eighth nerve all other cranial nerves are of importance as local signs of intracranial lesions. Absence of smell is frequently found on the side of the lesion in frontal tumors. Ocular palsies are frequently found, choked disc is a rule and is sometimes greater on the side of the lesion, acting in this case as a localizing sign. Disturbance of taste occurs at times and is of localizing value. Facial weakness has been mentioned and is of great significance. Disturbance of the 10th, 11th, and 12th nerves occurs frequently, especially in extensive lesions along the base of the skull and in those that involve the distal portion of the brain stem.

Among all localizing signs X-ray is one of the most valuable and all tumor suspects should have a routine skull X-ray. Sometimes calcification in the tumor shows its exact location. Anomalous cortical vessels may be brought to light, cortical atrophy may be present. Following air injections, distortion or displacement of the ventricles is frequently shown; dilatation is found at times. In fact, over 50 per cent of brain tumors show some localizable signs on X-ray with or without air injections by the cranial or lumbar route. While the value and importance of air injection is generally recognized in all clinics, it is a step that should not be undertaken until every available clinical method of localizing the lesion has been exhausted and the site of the tumor is still a questionable one. The too hurried use of air injections is to be compared with X-raying of the chest before the patient has been examined carefully with a stethoscope.

We could mention the variability of signs as shown by different types of intracranial tumors or various other phases of intracranial pathology that come under his heading; however, we believe that the axiom of diagnosing the tumor first, and worrying about the type later should apply in this case. We have not endeavored to name all or nearly all the signs, general or local, found in brain tumors, but have only touched briefly on those more commonly present. No brain tumor shows all the general or focal signs mentioned, some only a few, but there is rarely one that cannot be picked up if we search carefully along the general lines mentioned here. When we consider the fact that intracranial tumors are second in frequency only to those of the pelvic organs we are bound to realize our responsibility to our patients and to ourselves in regard to intracranial conditions.

In conclusion I would like to emphasize the fact that intracranial tumors are not rare; that they are frequently overlooked because

their possibility is not borne in mind; that, when they are present, they give definite and unmistakable general and focal signs, just as lesions elsewhere in the body.

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Medical Arts Building.

PROBLEMS IN THE RELATION OF STREPTOCOCCI AND DIPHTHEROID BACILLI TO CHRONIC INFECTIOUS ARTHRITIS.*

AUBREY STRAUS, Richmond, Va.

The report of finding streptococci in the blood stream in cases of Chronic Infectious Arthritis by Cecil, Nichols, and Stainsby[1] in 1929 stimulated an active interest in this subject. Shortly after the publication of this work the examination of blood cultures was begun in this laboratory.

The technic employed is essentially that used by these authors, which, in turn, is modified from that of Clawson.[2] In addition to the clot cultures made according to the method described in their work, a culture was always made by the inoculation of about 5 c.c. of blood directly into a bottle of beef heart infusion broth. In the first cultures made, about 20 c.c. of blood was used, but in the later cultures this volume has been increased to approximately 30 c.c. Thus there are now four bottles inoculated from each blood culture. One with about 5 c.c. of fresh blood and three with clots from tubes containing about 8 c.c. each.

The cultures discussed in this paper differ fundamentally from those described by Cecil in that they came from a number of different physicians. The selection of cases varies greatly according to the physicians making the selection, and as might be expected, the percentage of positive results occurring in a series from one physician is very different from that of another. The larger part of the cultures have been taken in this laboratory; a few by the laboratory staff at the home of the patients, and the remainder submitted by the physicians themselves.

Because of the fact that these cultures come from different physicians, only a limited attempt can be made to correlate laboratory results with clinical findings. Certain observations, however, from the laboratory standpoint alone seem justified.

The number of cultures reported here is considerably larger than that reported by some other observers who have been unsuccessful in confirming the work of Cecil and his associates. As will be pointed out later, a small series of cases might readily lead to erroneous results. Table No. 1 sums up the greater part of the work done in this laboratory.

TABLE I

RESULTS OF BLOOD CULTURES EXAMINED SEPTEMBER, 1929, TO AUGUST 15, 1931

	Positive	*Negative*	*Contaminated*	*Total*
No. of cultures	105*	604	41	750.
Percentage	14 0	80.5	6.1	100.0

*Streptococci 31
Diphtheroids 74

These findings seem to be explicable in only one of three ways:

1st. That the streptococci and diphtheroids are contaminations.

2nd. That these organisms are present in normal persons as well as in those having arthritis.

3rd. That these organisms are associated with the disease.

The first of these explanations has been advanced by Nye and Waxelbaum,[3] Dawson, Olmstead and Boots[4] and others, and has received much publicity. Their explanation, however, does not seem convincing. While it is quite true that the technic employed is in-

*Read before the sixty-second annual meeting of the Medical Society of Virginia, at Roanoke, October 6-8, 1931.

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volved and gives abundant opportunity for contamination, the contamination of more cultures by streptococci and diphtheroid bacilli in *pure culture* than by staphylococcus albus, for example, is, to say the least, a very remarkable coincidence.

Were contamination the answer, the question then arises as to how such contamination might occur. It would seem that if the streptococci were to be present as a contamination that the respiratory tract of the laboratory worker would be the most likely source. With this in view, a series of experiments was conducted.

A number of blood culture bottles which remained sterile after one month's incubation were used. These bottles were coughed into and the growth resulting examined. In the first place, it was found that these bottles were not so easily contaminated as might be expected, and that rather vigorous coughing was necessary in order to produce any growth. With each series that was coughed into a control culture of exactly the same kind was used and inoculated with a pure culture of streptococcus. The control cultures invarably showed growth.

Twenty-nine bottles were coughed into and examined after five days' incubation. Twenty bottles remained sterile and nine showed growth. In five of these a streptococcus was present but never in pure culture; two of these five also showed a diphtheroid bacillus. Staphylococci, as might be expected, were the predominating organisms in these cultures.

It has been suggested that the repeated opening of the blood cultures in the technic employed is a factor of importance in producing contamination. Unquestionably the chance of contamination is increased every time a bottle is opened so that the examination on which the organism was found has a decided interest. This is shown in Table 2.

TABLE II

SHOWING EXAMINATION ON WHICH ORGANISM WAS FOUND

Organism	*1st*	*2nd*	*3rd*	*4th*	*5th*	*Total*
Strep.	23	4	3	1	0	31
Diph Bac.	25	14	13	18	4	74
Total	48	18	16	19	4	105
Per cent	45.5	17.1	15.2	18.1	3 8	100

As seen in the above table, instead of each successive examination showing a larger per cent of positive results, the opposite is the case. More than 45 per cent positive findings were at the first examination, which was made four or five days after inoculation of the cultures; while only 3.8 per cent was found positive on the fifth examination which is usually made about thirty days after the inoculation of the culture. Likewise, it has been noted that distinct colonies are often to be seen on the surface of the blood clot, a phenomenon that would hardly occur were these organisms mere contaminants.

The original bottle (that is the bottle of medium inoculated directly with blood at the time of taking the culture and consequently not subjected to the handling given the clots) has revealed a diphtheroid in eleven cases, and a streptococcus four times. Contaminating organisms practically never appear in the original bottle, except when the whole culture is contaminated with a spore forming bacillus. When this does occur the syringe is generally suspected as the source of the contamination.

If the contamination theory is to stand, some more positive proof must be shown by its advocates. Such proof is at present lacking. Contaminations occur readily, especially in the first work that one does. In a preliminary series of 87 blood cultures not included in Table I, twenty-nine or 33.4 per cent were contaminated as contrasted with 5.5 per cent in Table I. Refinements in technic and increased experience are responsible for this great decrease. It is possible that the claim of contamination made by some is due to the fact that they did not advance beyond this preliminary stage.

The second possibility—that streptococci and diphtheroid bacilli are as prevalent in the blood of normals as in the blood of those having arthritis—is perhaps still open to question. In my own work the number of blood cultures from normal people, examined by the method described, is too small to be significant. Only fifteen cultures from normal individuals have been made directly for the purpose of determining this point. These have in every instance proved sterile.

However, in previous work[5] dealing with 822 blood cultures made by a different method but involving the use of a bottle of infusion broth such as was used in the present series of blood cultures, no diphtheroid bacilli were obtained and only seven cultures of streptococci. All seven of these cultures came from cases subsequently fatal. The blood cultures in this old series were collected almost exclu-

sively from acute cases in which typhoid fever or septicemia was suspected. Were the diphtheroid bacilli or streptococci "normal" inhabitants of the blood stream it would seem that they might have been picked up in some of these cultures.

However, more convincing than this, is the later work of Cecil, Nichols and Stainsby.[6] In their article they show a control series of 104 cases with only four positive blood cultures and each of these four cases demonstrated some suspicious symptoms. Twenty of these 104 cases were from absolutely normal individuals and no organisms were present in the blood from any of these cases.

In view of these observations it seems highly improbable that normal individuals harbor either streptococci or diphtheroid bacilli in their blood stream. If we discard this theory and that of contamination, we are left only the third possibility—that a direct association exists between these organisms and the disease.

This view seems the most reasonable and there is much evidence to substantiate it. The physicians for whom this laboratory has worked have found very close accord between their clinical observations and laboratory results. While true that negative blood cultures have frequently been obtained in cases that were clinically arthritic, in only rare instances has a positive blood culture been obtained where chronic infectious arthritis has not been definitely diagnosed.

As mentioned before, where cultures come from many physicians, clinical observations and laboratory results are more difficult to correlate than where all is under a unified control. Fortunately, however, a comparative study of the clinical diagnosis and blood culture findings in a series of sixty-two cases from one physician has recently been made possible.

TABLE III

No. of Cases	*Clinical Diagnosis*	*Blood Culture*
31	Typical Chronic Infectious Arthritis	17 Positive 14 Negative
7	Suspicious	7 Negative
13	Degenerative Arthritis	1 Positive 12 Negative
3	Subdeltoid Bursitis	2 Positive 1 Negative
1	Gonorrheal Arthritis	1 Negative
7	Negative	7 Negative

To consider the above figures from another standpoint. There were twenty positive blood cultures. Of these seventeen were from clinically typical cases, two streptococci and fifteen diphtheroid bacilli. The other three positive cultures were from cases not typically chronic infectious arthritis, but cases which might have had some infectious involvement; these were diphtheroid bacilli.

It may be noted in the above tables that diphtheroid bacilli have been found much more frequently than streptococci. As diphtheroid bacilli are far more widely distributed than streptococci, their significance in blood cultures must be seriously questioned. However, their persistence in these blood cultures, and their frequent occurrence in the original bottle suggests that these organisms are also associated with the disease and are not merely adventitious.

This observation also has confirmation in other work. While not attaching much significance to the diphtheroid bacillus, Cecil[1] does report finding them in both blood cultures and synovial fluid. Margolis and Dorsey[7] also report diphtheroid bacilli in both blood cultures and synovial fluid.

In our own work with synovial fluids covering ten cases, staphylococcus aureus was found once, a diphtheroid bacillus twice, and both a streptococcus and diphtheroid bacillus in one case. This latter will be discussed in detail later.

Mellon's work[8] in which he described a close relationship between certain strains of diphtheroid bacilli and streptococci seems to have a decided bearing on this work. Mellon's methods were employed, and after persistent effort, successful results were obtained and several of the organisms considered diphtheroid bacilli at the time of their isolation assumed a true streptococcic form.

Since this observation was made, all of the diphtheroid bacilli isolated have been so cultured, with the result that of thirty-six strains so far worked with, twenty-four have assumed streptococcic morphology.

This somewhat startling observation raises an entirely new question. Are these two organisms one and the same? If so, then it is entirely possible that the morphology of the organism as it is found in the blood cultures is dependent either upon some factor of resistance in the patient, as suggested by Koch and

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Mellon,[9] or else upon some peculiarity in the particular batch of culture media employed.

The effect of culture media upon the morphology is well illustrated in the case referred to above, where both a streptococcus and a diphtheroid bacillus were recoverd from a specimen of synovial fluid. Several broth cultures inoculated with the fluid showed only a streptococcus in pure culture, while the blood agar plates inoculated at the same time and from the same fluid showed numerous colonies of diphtheroid bacilli and no streptococci. These colonies of diphtheroid bacilli when inoculated into serum-bouillon assumed streptococcic morphology after the first generation. On solid culture media, the diphtheroid form was retained for several months. Results practically identical with this were also obtained in a blood culture from a case of endocarditis.

The most logical explanation of this phenomenon would seem to be pleomorphism. However, there are several factors that stand in the way of this explanation. In the first place, while the change from the bacillary to the streptococcic form is easily carried out, sometimes in the first or second generation, we have never been able, even after repeated trials, to bring about the change from streptococcic to bacillary form.

Then again, where the two forms of the one organism have been successfully retained in pure culture and comparative fermentation tests made, these tests have shown a decided difference in results. The three examples given in the following table are typical of the many trials.

TABLE IV

COMPARATIVE RESULTS OF FERMENTATION IN STREPTOCOCCIC AND BACILLARY FORMS

Organism	*Dextrose*	*Lactose*	*Mannite*	*Salacin*	*Succrose*
S1 Diphtheroid	+	0	0	0	0
S1 Streptococcus	+	+	+	0	0
H1 Diphtheroid	+	+	+	0	+
H1 Streptococcus	+	+	0	+	0
H2 Diphtheroid	+	0	0	0	+
H2 Streptococcus	+	+	0	+	0

It seems from the above table that the diphtheroid and streptococcic forms differ in their fermentation reactions as well as in their morphology. Furthermore, limited study up to the present time indicates antigenic differences between the two forms.

Within the streptococcic group itself fermentation reactions indicate that these organisms fall into different groups rather than into one specific species. An examination of their hemolytic properties also shows a decided difference. A few strains are moderately hemolytic; some show a trace of hemolysis; while others, the majority, are non-hemolytic.

Agglutination reactions likewise indicate a lack of specificity. Attempts to immunize rabbits against the streptococcus and diphtheroid bacillus have not been as yet particularly successful. Type K1, however, has produced a strong agglutinating serum. This serum has agglutinated eleven strains but has failed to agglutinate nine other strains. Type H2 produced a fairly good serum which agglutinated K1 and also four other strains. Though limited, these agglutination tests indicate a number of different strains and not one specific variety.

The agglutination test with the patient's serum against Cecil's B4 (B13) has been tried in a number of cases and seems to have diagnostic value. A disturbing factor, however, is that in only two cases has the patient's serum even weakly agglutinated his own organism although this has been tried in twenty-three instances—seventeen of the twenty-three sera having agglutinated B4 in high titre.

While the agglutination test appears to have diagnostic value in chronic infectious arthritis, the claim that it is as dependable as the Widal test in typhoid fever does not seem to be justified. The agglutination test in typhoid fever may be made from a stable preserved antigen so that practically identical results are obtained in repeated trials. The agglutination test in arthritis, however, must be made with a living antigen which in my experience is variable. The same serum does not give identical results on different days, but may at times vary greatly. Consequently, I have found it advisable to try each serum two or three times before reporting the result.

Distinct serological differences between the "typical strain" B4 of Cecil, the K1 group mentioned above, and other streptococci isolated from blood cultures in this laboratory, demonstrates a distinct lack of unity among these streptococci.

DISCUSSION

This paper is to be regarded as a preliminary report. Even though a large series of blood cultures has been studied, a great deal more work is necessary to clear up the problems involved. However, the attempt of some to set aside the positive blood culture findings

as mere contaminations seems unjustifiable. Both the diphtheroid bacilli and the streptococci appear to be definitely associated with chronic infectious arthritis. It is entirely possible that the association may be secondary in character but there is ample evidence that such an actual association exists.

I believe that there exists a distinct relationship between the streptococci and diphtheroid bacilli isolated from blood cultures. There is strong evidence of this relation in spite of certain facts to the contrary. Work on these lines, however, has not progressed sufficiently to suggest what the character of this relationship may be. Diphtheroid bacilli, presumably in pure culture, may be changed readily in proper culture media to the streptococcic form, yet these two forms when grown side by side show differences in their cultural as well as in their morphological characteristics. Much work is needed to clear up this relationship, but in the meantime, diphtheroid bacilli found in blood cultures should be carefully studied and not regarded as merely adventitious.

My work indicates that there are several organisms involved and not one specific streptococcus. This, to me, is a perfectly logical conclusion that would also explain the previous apparent discrepancies by other investigators. The gonococcus has long been known to be the cause of an arthritis at times indistinguishable from the chronic infectious type.

It seems reasonable to look upon chronic infectious arthritis as a syndrome such as exists in pneumonia or meningitis. These diseases are definite infections though not of a specific nature. Either pneumonia or meningitis may be produced by many varieties of bacteria. Might not the same be true of arthritis? Might it not be definitely infectious though not caused in all cases by a specific streptococcus?

Grateful acknowledgment is made of the valuable aid rendered by Evelyn Fay Cox and Mildred E. Anderson.

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616 *West Grace Street.*

DISCUSSION

DR. OSBOURNE O. ASHWORTH, Richmond: I first became interested in blood culture work in Chronic Infectious Arthritis in 1927, when I had the privilege of treating two patients from whom Dr Cecil had isolated a streptococcus.

Mr. Straus and I are both deeply indebted to Dr. Cecil for his kindness in giving us his technique of blood culture.

In a previous report made about two years ago, I reported fourteen positive cultures from forty-three apparently typical cases of infectious arthritis. In a recent series of thirty-one blood cultures of typical cases, there were seventeen, or 55% positive cultures. If repeated cultures are taken from each typical case after massage or exercise, the percentage of positive cultures will be much greater.

When positive cultures are not obtained from the blood, most patients will submit to a joint culture or to the removal of an adjacent lymphatic gland, which may show the typical organism described by Cecil.

It is hard to say just how much benefit is obtained from the autogenous vaccine in these cases. Arthritis is definitely only one branch of a large pathological tree.

When treatment of the patient's general condition, correction of metabolism, anemia, nervousness, treatment of the very frequent achylia, colonic irrigations, removal of the foci of infection, administration of a low carbohydrate or low purine diet (where indicated), baking massage, vasodilators when there is lowered sugar tolerance, have failed to give visible improvement, and when these are tried together with vaccine therapy and arrest or cure occurs, it is definite that there is something to the vaccine besides psychotherapy.

Results from small doses of vaccine given intravenously have been much more definite than from larger doses of vaccine given sub-cutaneously in my series of cases.

Rowntree and Adson have called our attention to the effect of sympathetic ganglionectomy and ramisection with remarkable results in some cases Though this procedure very evidently does not eliminate infection, it may alter tissue reaction against infection with resulting clearing up of disability and deformity.

If the reaction is one of bacterial allergy, here again for cure we are more dependent upon specific desensitization against the offending organism for best results. In three cases where an organism was isolated from a joint, striking results were obtained by the use of vaccine therapy.

I am certain that the reason Mr. Straus has had such a low percentage of positive cultures is due to the fact that there has not been a proper selection of cases. Most of his cultures have been cases of degenerative arthritis, and repeated cultures have not been taken from typical cases.

I am much interested in Dr. Cecil's remarks regarding sedimentation tests which may help us in knowing when our patients have had a sufficient amount of vaccine therapy.

DR. RUSSELL L. CECIL, New York City: It is a great gratification to me to see these results corrobora-

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tive of our findings coming from the laboratories of Mr. Straus and his co-workers. I am quite sure that he is right in his statement that diphtheroids can be transmuted into Streptococci. Not only Rosenow, but other individuals have told me they have seen this happen in their laboratories, and certainly it has happened in our laboratory more than once. Some very interesting work has recently been done at New Haven. In the process of working with bacteriophage, diphtheroids have been transmuted into Streptococci. It looks as though modern bacteriology is getting so strange that the whole science will have to be rewritten.

Recently we were put to a blindfold test by the Presbyterian Hospital of New York, which sent about sixty bloods for diagnosis. Out of these sixty we picked correctly nineteen bloods from patients with rheumatoid arthritis by the agglutination test. When Streptococci become green they lose their agglutinative quality. I do not want to be too dogmatic, but I believe that these organisms are probably one biological group. I must admit that frequently we get our organisms out of the blood in green form, and in the green form they do not agglutinate. If we can get them in the hemolytic state they will agglutinate. Not only that, but also the Streptococci which are recovered from scarlet fever or erysipelas will agglutinate with arthritic serum. It often happens that the patient's serum will not agglutinate his own strain.

This is difficult bacteriology, and these organisms are hard to work with. But I am convinced that we are on the right track and that this work will eventually be corroborated.

Mr Straus, closing the discussion: I want to thank Dr. Cecil again and express my appreciation for the cooperation and help that he has always given us. I want to repeat, also, that I think much of the difficulty we are all having is due to the fact that the classification of the Streptococci is still in a chaotic condition. Everybody, I believe, is classifying them somewhat differently.

If I may be pardoned for doing so, I shall use my pneumonia analogy once more. I think in this work we have to keep in mind that it is perfectly possible that the apparently discrepant results of these different workers may all finally fit into the picture. Following the flu in France, we might have said that pneumonia was caused by the streptococcus. On the other hand, had I never examined pneumonia anywhere else except in Richmond one particular winter, I would have said it is caused only by Type I Pneumococcus. I think we may likewise come to find that all these different findings in arthritis will fit into the general scheme.

THE ASSOCIATION OF ANGINA PECTORIS AND ANEMIA.*

WILLIAM B. PORTER, M. D., Richmond, Va.

In 1918 Herrick and Nuzum,[1] in a discussion of their clinical experience with 200 cases of angina pectoris, called attention to the occasional association of this syndrome with severe anemias. They noted four cases in their study. In 1927, Herrick[2] reported three additional cases and in his report discussed the relationship of anemia as a contributing factor in angina pectoris, particularly in those individuals who have imperfect coronary circulation from narrowing of the lumen of these vessels by sclerosis and atheromatous degeneration. Bullrich,[3] in 1925, cited seven cases in his own practice. Coombs,[4] in 1926, described eight cases, and Evans reported one case the same year.

In reviewing our cases of megaloblastic anemias, thirty-five in number, we found two of them had angina pectoris (effort type). None of the previously reported cases received liver treatment; consequently, the relationship to the anemia was not definitely established. It would appear logical to study cases of this type during an artificially induced remission following adequate liver therapy. A study of this type more completely evaluates the importance of the associated anemia while at the same time it gives one some insight into the pathologic physiology and the pathogenesis of angina pectoris.

Case One: W. M., contractor, aged 60. First seen September 29, 1929, complaining of substernal pain and oppression induced by slight exertion. He stated that his first symptoms were noted fourteen months previously, and that they were fatigue, slight dyspnea and substernal oppression when he walked rapidly up slight inclines. These symptoms had gradually increased in intensity until at that time he could not walk as much as a level city block without experiencing such intense substernal pain and oppression that he would be forced to rest. Rest gave him complete relief. His history was otherwise essentially negative, except that he had recently noted numbness and tingling in the hands and feet and that his complexion was sallow.

Physical Examination: The patient was a well nourished man, weighing 196 pounds, 5 feet, 10 inches in height. The mucous membranes and skin were manifestly pale and the tongue was smooth, clean, and the papilla atrophied. The heart was normal in size and shape and there were no cardinal murmurs. The first sound was lacking in muscle tone, and the second aortic sound was amphoric and ringing in quality. Pulse rate 84, sinus rhythm. The peripheral arteries and fundus vessels showed moderate sclerosis. The blood pressure was 115 systolic and 85 diastolic. The

*From the Department of Medicine, Medical College of Virginia, Richmond, Va.

Read by title before the sixty-second annual meeting of the Medical Society of Virginia, at Roanoke, Va., October 6-8, 1931.

electrocardiogram showed slight left axis deviation and an isoelectric T-wave in lead I.

LABORATORY DATA: September 7, 1929, Hemoglobin 62 per cent. R. B. C. 2,130,000, W. B. C. 4,600, polys 68 per cent, mean diameter 9 microns, reticulocytes .05 per cent. Gastric analysis: Hydrochloric acid 0, combined acidity 11, total acidity 11. Blood negative.

DIAGNOSIS: I. Angina pectoris. II. Coronary sclerosis. III. Pernicious anemia.

COURSE AND TREATMENT: September 8, 1929, liver extract 30 c.c. t. i. d., dilute HCl 4 c.c. t. i. d. September 20, 1929, hemoglobin 76 per cent, R. B. C. 3,200,000, W. B. C. 8,400. On this date he reported that he could walk on the level with comfort. October 10, 1929, hemoglobin 86 per cent, R. B. C. 4,400,000. Symptom free. November 2, 1929, hemoglobin 94 per cent, R. B. C. 5,000,000. On this date he was free from symptoms and he has engaged actively in his vocation up to the present time.

Case Two: White male, farmer, aged 56. First seen December 9, 1929, complaining of nocturnal dyspnea and substernal pain which had recurred nightly for a period of two weeks. He stated that for seven months he had been unable to do any work for the reason that minor effort caused severe pain in the substernal area and left arm, but this would be completely relieved by sitting down for eight to ten minutes. At present he was confined to bed, yet the attacks continued to occur at night, requiring morphine for relief. Two years previously he had been transfused three times for anemia, but on account of the finding of an adequate amount of hydrochloric acid in the gastric content no liver feeding was recommended. For eight years he had a varying amount of diarrhea, amounting to six to eight stools during the worst periods, but never less than three to four stools a day. The stools were not bulky and never contained blood. Anorexia was almost absolute. His weight had reduced in three years from 168 to 122 pounds.

PHYSICAL EXAMINATION: A poorly nourished man, 5 feet, 10 inches in height, weighing 119 pounds. The skin and mucous membranes were manifestly pale. The tongue was coated and there was no atrophy of the papilla. The lungs were negative, except for many small and large moist rales in the bases posteriorly.

Heart: Apex in the fifth interspace, 10.5 cm. from the median line, and was diffuse in quality. Percussion denoted a general increase in relative cardiac dullness, the left margin being 11 cm. from the median line in the fifth left intercostal space. There was a systolic murmur heard at the apex, transmitted laterally to the left, and a systolic basal murmur, but there were no associated thrills. The aortic second sound was indistinct and the pulmonic second sound was definitely accentuated. The peripheral and fundus vessels showed moderate sclerosis. The pulse was regular, rate 110, blood pressure systolic 168, diastolic 90.

Abdomen: Generally tympanitic, especially in the lower zone. The edge of the liver was palpable and slightly tender.

Neurological examination negative.

LABORATORY DATA: Blood—hemoglobin 71 per cent, R. B. C. 2,810,000, W. B. C. 5,400, slight anisocytosis and poikilocytosis, mean diameter 9-1 microns, serum calcium 8.2 mgm. Stomach analysis: HCl 20 degrees, total acidity 36 degrees. Blood negative. Stools negative for ova, parasites and blood. No excess of fat noted. Electrocardiograms: rate 110, rhythm normal, Q. R. S. complexes low voltage in all leads. P. R. interval 0.21 sec. T-wave isoelectric in lead I.

DIAGNOSIS: I. Angina pectoris. II. Congestive heart failure. III. Non-tropical sprue with a megaloblastic anemia ("pernicious anemia" type).

TREATMENT: Bed rest was continued, and liver feeding started on December 10, 1929, consisting of 30 c.c. of an aqueous extract of liver three times a day. The calculated basal dose of digitalis was given orally during the first twenty-four hours. January 8, 1930, hemoglobin 85 per cent, R. B. C. 3,900,000. At this time all nocturnal pain and dyspnea had disappeared. January 13, 1930, hemoglobin 92 per cent, R. B. C. 4,400,000. On this date the patient was advised to sit up. It was apparent that he was gaining in weight for his appetite was above normal. The patient has been seen at regular intervals and his progress noted. The red blood count has remained between four and five million. When last seen, one month ago, his weight was 156 pounds and he was entirely free of cardiovascular symptoms and he was engaged in active physical work.

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Discussion: The two patients present many features in common. They were both past fifty years in age and it may be assumed that the coronary arteries had already begun to lessen in area from sclerosis of these vessels. In each instance, however, the vascular bed was adequate to meet the demands for myocardial nutrition so long as the circulating blood was normal. When the qualitative condition of the blood was below normal the compensatory mechanisms were inadequate to meet the nutritional needs of the heart muscle and relative ischemia became absolute. The relief from symptoms in each instance, following the restoration of a normal qualitative state of the circulating blood, proves in these instances that deficiency in available oxygen was at least one factor in the production of the angina pectoris syndrome. It is surprising that angina pectoris as well as other myocardial syndromes are not noted more frequently in the primary anemias, especially when it is noted what a tremendous increase in heart work there is in the severe anemias.

Fahr and Ranzone,[5] studying the circulatory compensation for deficient oxygen carrying capacity of the blood in severe cases of pernicious anemia, noted that the minute volume of blood was increased about 250 per cent and that the systolic output of the heart was increased in the same degree. This was brought about largely by an increased blood velocity due to lowered viscosity of the blood and an increased effective cross section in the vascular tubing. The same observers concluded that the coronary circulation in the severe anemias is at the upper limit of the possible, being about as great as that found in severe work. These compensatory adjustments can take place only in the presence of a normal coronary arterial tree. The two cases here studied developed incapacitating symptoms with blood levels in each instance above two million and hemoglobin percentages never less than 60 per cent. It may be assumed, therefore, that imperfect coronary circulation existed from diseased vessels, and that the superimposed anemia precipitated incapacitating myocardial ischemia.

Conclusions

I. Two patients having a megaloblastic anemia and angina pectoris have been studied and in each instance relief was obtained by restoring the normal qualitative state of the blood by liver feeding.

II. In the study of angina pectoris the possibility of an associated anemia as a possible precipitating factor must be considered, or a valuable therapeutic approach to the situation may be omitted.

III. This study adds additional evidence to the "myocardial ischemia" conception of the pathogenesis of angina pectoris as opposed to the aortic theory.

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TRAUMATIC INDUSTRIAL SURGERY.*

E. T. TRICE, M. D., F. A. C. S., Richmond, Va.

The American College of Surgeons has had three meetings to consider this rapidly growing and important branch of surgery. Thoughts and ideas have been exchanged relative to the care of the injured and, in the preparation of their program, advice has been secured from those interested in both scientific and economic sides. Keen interest has been shown in these meetings and it is expected that better surgical care can be secured for the injured workman.

The board began its work in 1927. The object was to search for facts, and to analyze and arrange them to the end that they might be utilized practically and effectively in applying better care for the injured.

All of their research and discussions indicate that there is no indiscretion in the conclusion that the better, the more scientific, and the more intelligent management of the injured workman results in a greater economic saving for all concerned. No doubt exists in the belief that this is a great scientific and economic problem which our surgeons can be of great assistance in improving. An opportunity is offered

*Read before the sixty-second annual meeting of the Medical Society of Virginia, at Roanoke, October 6-8, 1931.

if our profession will participate in a work which I have found to be interesting.

The surgeon doing industrial traumatic work must familiarize himself with the Workman's Compensation Law. He is as much governed by that law as the injured workman or corporation, and in participating in this work and being responsible to several units must make himself an integral part in spirit as well as practice.

These traumatic cases present problems quite different, scientifically and psychologically, from those encountered in a general surgical practice, and I predict that the future will provide us with a fuller opportunity to study the psychology often encountered in accident victims, and I hope that we will give thought to the treatment of traumatism.

The injured workman is a human organism and his treatment and ultimate welfare should not be jeopardized by the employment of surgeons on any basis except a standard fee basis. Any other basis of remuneration is contrary to the best treatment, and the success of traumatic surgery is undermined, as cheap fees along with poor results are costly. As stated, their individual and collective, present and future welfare is not safeguarded nor are the recommendations of the Board of Traumatic Surgery met, and no economy is obtained for the industrial plant or insurance carrier.

The past twenty years have witnessed tremendous change in the attitude of employer to employee and the strides in orthopedic and plastic surgery are well enough known. Every one of us can remember when a workman took a job at his own risk and if he was not satisfied with the safety of the work or the hygienic surroundings, he could quit. This was a pernicious attitude and I think the workman of today should be very grateful for what is being done to rehabilitate him and have him classified as a tangible asset to his company. The slaves of our forefathers were considered as such and had a definite money value. In those days it was considered wise to restore them to health. Therefore, with our increased knowledge he should be considered as such today and enjoy the benefit of such scientific knowledge as we have acquired.

As I have said, a marked change has taken place in the past few years and it has not reached its completion. The workman has acquired new rights which are recognized both by his employer and the public. This, I think, is due to the increasing democracy of mankind, and the realization by the employer that after all he is his "brother's keeper" and that restoring an experienced workman to his regular duties is economy. Industry has learned that it is cheaper in dollars and cents to keep employees healthy and safe, for every man, however humble his work may be, becomes more efficient as his experience increases. He has a right, therefore, to demand his safety, and it becomes the duty of those of us who do a certain amount of industrial surgery to use our best efforts to maintain the health and safety of this large group of American citizens and to restore to health as quickly as possible those who have become disabled.

We also have to consider the psychologic side of this rapidly growing and important branch of medicine, and it has been proven to me time and time again that the handling of an injured workman differs from the handling of a private patient. The latter comes to you as a result of his own decision, but because the workman is sent to you there exists some doubt in his mind as to how well he will be received. Since we must learn the truth and since we must enforce our faithfulness to employer and employee it is not easy to place him in a position of ease and learn the truth. This, of course, does not apply to those who suffer definite objective signs of injury, but numerous industrial cases, especially back injuries, feel like it is necessary to exaggerate their feelings in order to impress the attendant with the seriousness of his case, without an intention to deceive him. From this impression it has been my experience that I can learn the truth more quickly by conceding the accident and, admitting that he is suffering, impress him with the importance of his visit; by so doing I can get from him more history, more truth, and pick out that very small group of malingerers.

How important, therefore, it is for the industrial or traumatic surgeon to find a way to learn the truth in order that the correctness of the primary diagnosis be assured, complications prevented, and loss of time, which results from functional impairment and runs into a large total, be reduced.

Injuries of the back present to me a most difficult problem. To arrive at anything like an accurate diagnosis is, at times, very hard,

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and for practical purposes they can be divided into five groups:

a. Muscle strain.

b. Lesion of sacro-iliac joint.

c. Sprain of deep lumbo-sacral structures.

d. Chronic strains.

e. Non-traumatic disease of lower back.

(a) Simple muscle strain caused by heavy lifting in one not accustomed to that much exercise is seldom seen, as the condition corrects itself in a few days.

(b) Sprain of sacro-iliac joint manifests itself by a sudden pain in lower back. The patient feels as if something has suddenly given way; he has to give up his work, but symptoms do not reach the maximum for 24 hours. Immediate examination will locate pain in the sacro-iliac joint, and later the whole lower back becomes sore. There is always a synovitis and, if the effusion is marked, a slight fullness may be felt over the joint. Kernig's sign is present. It is also noticed that these patients can bend the body toward the afflicted side, but motion to the opposite side is limited.

(c) The symptoms of the lumbo-sacral structures are in many ways similar to those of the sacro-iliac. The maximum pain occurs immediately rather than twenty-four hours later. Pain is a little higher and deeper. There is more limitation of motion of the lower spine than in sacro-iliac strain, and Kernig's sign is absent. In both types treatment is essentially the same and consists of absolute rest on a fracture bed, strapping of back and application of heat. Massage or passive motion is contraindicated. When these patients get into the hands of the osteopath the last state of that man is far worse than the first.

(d) The fourth group, or chronic strain of the back can, just as in other joints, result from repeated mild acute strain. Or they may occur as the result of years of poor posture. These cases are more vague and indefinite, and are well illustrated by that large group who went into the service. When stripped for examination they appeared to slump, standing first on one foot and then on the other, leaning against some object for support; they were definitely round shouldered, and their pains were vague. When they returned home they were erect with good strong back muscles. We see a great many of this type of patients who are prone to blame their pain on some unusual strain rather than their own physical defects.

(e) Lastly, we see back strain of non-traumatic origin, such as hypertrophic arthritis resulting from a focal infection, tuberculosis, chronic prostatitis, and bone tumors. Obviously in these cases X-ray is invaluable, and they should be treated by the orthopedist. Furthermore, I would urge that those cases of sacro-iliac strain which do not clear up in a reasonable time should have the benefit of the othopedic surgeon's advice and treatment.

Concerning hernia, I think there are times in the history of a hernia when even a physician is not able to determine its presence. After some strain the patient will finally discover he has a small inguinal lump, but this does not prove that it has just come into existence. It has just come down where it can be seen, for we have finally realized that hernias are potentially present from birth, that there is an open funicular process in the hernial canal which is congenital and that the term rupture, which implies the sudden giving way of the structures involved, is incorrect. A superficial study of the case might lead one often to arrive at this conclusion, but it is so exceptional that it represents a very minute fraction of the total.

Important as the X-ray is in general surgical practice, it is far more so in industrial surgery. It reveals positive evidence which often cannot be otherwise obtained and for the attendant adds a feeling of security, protection, and accuracy.

In the State of Virginia thirty-six thousand accidents were reported to the Industrial Commission last year. When we combine industrial accidents with highway accidents the total is very large, and it is my belief that anything, traumatism or disease, that exists to this extent occupies a very large place in our daily work.

In conclusion, I wish to emphasize, again, the large place that industrial surgery occupies in our daily practice, that it has problems peculiar to itself, and it behooves us to fit ourselves to handle properly this rapidly growing and important branch of surgery.

Grace Hospital.

PELLAGRA.*

J. GLENN COX, M. D., Hillsville, Va.

Pellagra is a disease characterized by skin lesions, gastro-intestinal disturbances, nervous and mental changes, and periodic seasonal variations.

Although pellagra has been known to be more or less prevalent in certain sections of Europe for nearly two hundred years and in this country for about twenty-five years, it is only recently that the cause for this disease has been made clear and any practical measure adopted for its prevention and treatment.

Pellagra occurs chiefly in this country in the rural sections of the south, principally where cotton is the dominant crop or where cotton manufacturing is the principal industry.

Pellagra occurs in Virginia chiefly along the southern border of the state with three southwest counties, Wise, Scott, and Washington reporting a considerable number of cases.

Statistics on pellagra in Virginia are not complete; too few cases are reported for the number of deaths.

In 1926 there were 236 cases reported with 116 deaths.

In 1927, 411 cases, 156 deaths.

In 1928, 460 cases, 193 deaths.

In 1929, 352 cases, 228 deaths.

In 1930, 808 cases, 212 deaths.

Taking a mortality of 10 per cent which is high, you can see that the number of cases reported is too small. Pellagra is either not being recognized as often as it should or the doctors are not reporting their cases.

Etiology.—It has been definitely established that pellagra is a dietary deficiency disease. Prior to the work of Goldberger and his associates, numerous theories had been suggested as to its cause and everything from cornbread to evil spirits had been accused. It is now generally believed that it is one of the dietary deficiency diseases caused either by a lack of an essential substance in the diet—a vitamin—or to a poorly balanced diet of low protein content.

It has been abundantly demonstrated that pellagra can be produced or prevented by varying the quantity of foods that contain the anti-pellagra substance, or vitamin. Pellagra is brought about by the absence of a specific and essential dietary factor and is in no way dependent upon starvation; the other foods may be in physiological balance except for shortage of this factor. In support of this dietary theory as to its origin is the prompt response of active cases to a well balanced diet, and the disease can be prevented by an adequate diet without intervention of any other known factor.

Also Goldberger and Wheeler carried out feeding experiments on convicts in Mississippi. The diet was derived from wheat flour, maize, corn, grits, starches, rice, Irish and sweet potatoes, some green vegetables, pork fat, sugar and syrup. At the end of six months six out of the eleven convicts showed evidence of pellagra while a large number of controls given an adequate diet showed no evidence of the disease. The cases seen in the well to do, where an adequate diet should be available, are those with some real or fancied digestive disturbance which has caused them to limit their diet. An analysis of the diet of a pellagrin always brings out the fact that there is a restricted supply or absence of foods of the animal protein group, that is, lean meat, milk, butter, and eggs.

The conclusions reached in an article to be published soon in the *Archives of Internal Medicine* by Dr. James H. Smith, are that there is evidence to suggest that the nutritional lack referred to by Goldberger may be in part specifically a lack of sulphur (cystine) or an error in the metabolism of sulphur. Further, the evidence suggests that given a nutritional lack, exposure to solar rays of high intensity tends to produce pellagra, particularly if there has been a deficiency of exposure to solar rays in winter. He also called attention to the fact that the distribution of pellagra correlates closely with the distribution of the cotton and tobacco crops, and that in communities where these crops are major agriculture interests, the annual incidence of pellagra tends to vary inversely with the price and inversely with the production of cotton and tobacco (acreage multiplied by yield per acre).

The Onset of the disease is insidious. There may be some loss of strength, vague digestive disturbances, slight diarrhea, headache, dizziness and some mental depression. A variable time after these symptoms the typical rash appears. It usually begins on the back of the hands as an erythema resembling an ordinary sunburn. The forehead, neck and feet may be involved. The lesions are symmetrical in lo-

*Read before the Southwestern Virginia Medical Society at its meeting in Marion, September 24 and 25, 1931.

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cation and are apt to be sharply defined and usually on areas exposed to the light. The lesions may persist for a few days or weeks and in chronic cases recur each year. The end result is usually an atrophic scarring so that the skin on the back of the hands and forearm has a parchment like texture with some pigmentation.

Symptoms referable to the digestive tract are stomatitis and diarrhea. Recurrent diarrhea occurs in about 75 per cent of the cases.

Mental changes occur in about one-third of the cases and many vary from apprehension, irritability, confusion, to actual dementia.

The blood picture may show a secondary anemia. About 40 per cent of the cases have either hypochlorhydria or an acyhlia gastrica.

The DIAGNOSIS of pellagra in a well developed case offers little difficulty. With a careful history of the diet, sore mouth, diarrhea and symmetrical dermatitis on exposed areas of the body the condition cannot easily be confused with anything else. The mental changes may be absent. The diagnosis should rarely be made without the skin lesions.

The PROGNOSIS, provided the case is seen early and the diet corrected, is favorable. The mortality for all cases should be under 10 per cent.

The TREATMENT consists of dietary, hygienic and drug therapy, given in order of their importance. Since the disease is unquestionably due to some dietary deficiency the rational thing to do is to supply the missing factors in the diet. The patient and family should be told the cause of the disease and the importance of the patient consuming an adequate diet. All fried foods should be forbidden, no salt meats or fish allowed. The patient should have plenty of milk, eggs, fresh meats and fish, chicken and fresh vegetables. The meat should be stewed or baked.

The HYGIENIC treatment requires that the patient be kept clean and comfortable.

Drugs play a very minor part in the treatment. Of the drugs used in the treatment, arsenic and dilute hydrochloric acid seem to be of some value. The arsenic may be given in the form of Fowler's solution. In cases of patients with achylia gastrica or hypochlorhydria, the dilute hydrochloric acid may cause a rapid disappearance of the stomatitis and diarrhea.

The response to the treatment is usually very prompt, the rash begins to fade in a few days, the mental condition improves and the whole physical make-up undergoes a change for the better. The diet must be followed indefinitely, once the patient has pellagra, or the disease will recur.

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WHY ALWAYS APPENDECTOMY?*

M. B. HIDEN, M. D., Warrenton, Va.

If there is an abscess in the appendix, if it is plastered to the cecum, if it is covered by dense adhesions and if the abscess is pointing into the cecum, the abscess may, by manipulation, be ruptured into the gut. Then, by sutures, the appendix may be buried deeper in the intestinal wall, thus saving the peritoneum from infection and insuring permanent drainage into the cecum.

If the appendix has ruptured and if an abscess has formed, a local anesthetic should be used and the abscess should be drained. The appendix can be removed later if necessary. This, of course, is known to everyone, but is certainly not generally practiced. This procedure should be emphasized.

While practicing in China and the Philippine Islands many years ago, I had a large number of cases of amebic dysentery, treated by washing the colon through an appendicostomy or cecostomy. The results were very satisfactory.

In recent years I have used appendicostomy and cecostomy for another purpose. In many cases of ruptured appendicitis I do an appendicostomy, if there is enough of the appendix normal or near normal at its base to allow this procedure. If the appendix is all bad, a cecostomy may be done. A large catheter with many holes is put into the cecum and led through the ileocecal valve into the small intestine. This catheter is left open continuously, and, every three hours, four ounces of a five per cent (5%) soda solution is put through this catheter into the cecum. Glucose may also be used. As the appendix is already ruptured, this operation should not increase the infection.

*Read by title before the sixty-second annual meeting of the Medical Society of Virginia, at Roanoke, Va., October 6-8, 1931.

ADVANTAGES OF THE ABOVE PROCEDURE

Gas is allowed to come away even better than when an enterostomy is done.

Post-operative acidosis is prevented.

Fluids are supplied.

Disagreeable enemas are not necessary.

Vomiting is nearly always prevented.

I believe that cases thus treated are much more comfortable and that they have a much better chance for recovery.

I have used this procedure for several years at the Fauquier Hospital, Warrenton, Va., and at the Loudoun Hospital, Leesburg, Va. Believing the results to be satisfactory, I ask, "Why always appendectomy in ruptured appendicitis? Why not appendicostomy or cecostomy?"

REMOVAL OF TONSIL BY ELECTRO-COAGULATION.

J. B. H. WARING, M. D., Cincinnati, Ohio.

Tonsillectomy is the most commonly performed surgical operation of today, and it is performed by the throat specialist, by the general surgeon, and by many general practitioners. It is unfortunate that many of the laity, and even many physicians, regard tonsillectomy as a comparatively simple and minor surgical procedure. Some tonsil operations are very difficult of perfect execution, so much so that post-tonsillectomy study of a considerable series of cases operated on by presumably experienced surgeons showed that three out of four of this series of tonsillectomies were imperfect in one regard or another when the throats were carefully examined some months after operation. In some, a fragment of tonsil tissue was left in one or both fossae; in others, the pillars had been removed or otherwise mutilated; uvulas were sometimes missing, or the throats so scarred up as to impair perfect function. In unskilled hands a tonsillectomy may be even dangerous to life from hemorrhage or other complication; and, with the best of hospital facilities and most expert operators, no tonsil operation can be said to be entirely devoid of danger.

The trouble is not so much with the operators, as it is with the operations—the operative technics commonly employed. In order of usage, tonsillectomy technics employed mostly today are snare and dissection in its many modifications; Sluder; electro-coagulation; and, lastly, perhaps suction tonsillectomy.

Despite its widespread usage, snare and dissection tonsillectomy is by no means a satisfactory technic. Its chief advantage is, perhaps, that it is at least applicable to all types of tonsils. Because it is often tedious and attended with more or less free bleeding, with resultant loss of still more time with hemostatic efforts, a great many dissection operators insist upon general anesthesia for all tonsil cases, adults as well as children. Either that, or the patient is so stuporous from some morphin-hyoscin combination that the average "local anesthesia" dissection tonsillectomy is more of a narcothesia than a local anesthesia. Both general anesthesia and narcothesia simply add to the patient's risk and discomfort. Because of the frequent occurrence of free hemorrhage, either primary or secondary, with tonsil dissections, such a tonsillectomy is distinctly one for hospitalization as a major surgical procedure. One has but to study the hundreds, even thousands, of tonsil instruments illustrated in current surgical catalogs to realize the widespread efforts made to obviate the difficulties and dissatisfactions of dissection tonsillectomy.

Jacobs and Trauner paint a perfect pen picture of snare and dissection tonsillectomy: "Theoretically, tonsillectomy by preliminary dissection aims to remove the entire tonsil intact, with the least amount of hemorrhage. This it often fails to do. The capsule is often so intimately adherent to the underlying aponeurosis that it is impossible to separate the two by means of a knife. What usually results is that the knife gets into the fascia back of the capsule and opens many bleeders, or else it gets into the tonsil tissue proper, so that the fibrous capsule is left in the fossa."

This pen picture is absolutely true to life, so much so that post-tonsillectomy observation of a large series of throats shows that three out of every four tonsil operations are imperfect in one respect or another—not a reflection upon the operators, but mute evidence of the inadequacy of dissection technic.

Neivert, of New York, an adherent of the so-called "sharp dissection school," paints the same picture in different words: "Our greatest difficulty is with tonsils bound down by scars and adhesions. Here a little patience and a sharp knife cutting close to capsule will keep us from buttonholing the pillars and pulling away chunks of muscle which cause excessive bleeding, possible infection and sub-

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sequent scarring. * * * How to make sure that one is in the proper line of cleavage is at times difficult. * * * Small tabs of tonsil or capsule with tonsil-bearing cells must not remain. * * * Taking off the pillars or uvula is scarcely excusable. * * * Perhaps the thing that worries us most is the bleeding."

"The capsule (so-called) is often so intimately adherent to the underlying aponeurosis that it is impossible to separate the two by means of a knife."

When the dissection operator encounters these badly adherent, deeply submerged tonsils of adult life, perhaps with a history of repeated peritonsillar abscess attack, he simply encounters a "mechanically impossible" situation, and endeavors to knife his way out to best of his ability.

One Chicago operator sadly but truthfully lamented: "I have been doing tonsil work (dissection) for twenty-five years, and I cannot do a decent job yet. One operation is very satisfactory; and maybe the very next one is such a bloody mess that it makes me ashamed of myself."

On the right kind of tonsils and in hands of a skilled operator, the Sluder technic is comparatively rapid and gets the tonsil cleanly in capsule; but all too often it also gets one or both pillars, slices the tonsil, or ends up in free bleeding. How difficult the Sluder technic is to acquire may be estimated from a remark by Sluder to the effect that he performed his operation a thousand times before he attained proficiency with it. The Sluder technic is not well adapted to local anesthesia operation,—so much so that many Sluder operators insist on general anesthesia for all cases, and dissect such tonsils, as they may slice with Sluder technic; or there are cases which experience tells them not to attempt with the Sluder instrument. Aside from damage to pillars and underlying throat tissues, the so-called sharp Sluder occasions free bleeding almost as commonly as does dissection technic. As a general thing, then, it may be said that the Sluder operation is rapidly losing ground in this country.

While it is strictly a surgical procedure, the suction technic eliminates almost completely the difficulties and disadvantages of Sluder and snare and dissection. It is very rapid, practically bloodless, and enucleates in capsule all types of tonsils with virtually equal ease,—and this without damage to pillars, uvula or underlying throat structures. The operation is peculiarly well adapted to local anesthesia operation, because the tonsil may be enucleated in from ten to fifteen seconds actual operative time, without pain or appreciable discomfort to patient, and it is practically bloodless in the vast majority of cases. On badly adherent and submerged tonsils, the technic is at its best, and is almost spectacular on the very types of tonsils that try the soul of the dissection operator and cause the Sluder operator to take one look and then lay aside his Sluder instrument with a baffled air. Experience has taught him he simply cannot get that kind of tonsil with a Sluder instrument. On these submerged and adherent tonsils, the tonsil suction tube simply lifts the tonsil into the bowl of the suction tube by air suction pull, whereupon the tonsil snare, previously adjusted, is rapidly carried down over the end of tonsil tube, and, as it is tightened, the heavy dull wire loop automatically drops into the line of cleavage between tonsil proper and the underlying aponeurosis, and dissects or shells out the tonsil in capsule so rapidly the eye can scarcely follow; unless actually seen at operation on some of these badly adherent, submerged tonsils, the thing is almost unbelievable. Tonsil operators who have never seen the suction method, as performed with proper equipment and technic, are able to conjure up all sorts of imaginary objections and difficulties; but these must fade into thin air in the light of actual performance. "Seeing is believing," as it were.

It is true, then, that the suction technic practically eliminates the difficulties and disadvantages of the older tonsil technics; and, because of its clean, bloodless type and absence of complications, may be performed under local anesthesia on adults just as easily and safely in the well-equipped office as in the hospital: but it is a surgical technic and the patient is not going to be able to get up from the surgical chair minus his tonsils, put on his hat and coat and go about his daily avocation. Restricted physical activity for four or five days to a week and a liquid or semi-liquid diet and more or less pain and discomfort are unavoidable accompaniments of surgical tonsillectomy, whatever the technic employed.

With the adult tonsil patient today, however, it is possible to remove his or her tonsil as a strictly "office" treatment without pain.

without bleeding or surgical shock, without damage to contiguous throat structures, with the patient able to enjoy the usual meals each day, and yet be completely ambulant throughout the treatment.—no hospitalization expense and no loss of time from daily avocation. These are economic factors that must be seriously considered with many tonsil patients. I refer to removal of the tonsils by multiple-stage electro-coagulation treatment.

Because of its manifest advantages from the patient's standpoint especially, all of my adult tonsil cases are given their choice of local anesthesia suction tonsillectomy, or of local anesthesia electro-coagulation removal of tonsils. In the hemophiliac and in the aged and physically debilitated, where tonsillectomy is indicated, electro-coagulation is my method of choice, not because it is easier for me, but because I believe it is easier and safer for the patient.

Electro-coagulation tonsillectomy by one-treatment technic is not advocated; and it is not advisable in children, where general anesthesia is a practical necessity for proper work.

Tonsillar coagulation has gone through the developmental period incident to any new surgical procedure; and it has been highly praised and just as severely condemned, but condemned as a rule by those who really know nothing of the technic in a practical sense, or who have attempted the work with inadequate high frequency electrical machines, or without proper instruction and technic. These are absolute essentials, requiring not only good knowledge of the anatomy and surgery of the tonsil region, but also careful and conservative usage of electro-surgical technic.

No effort will be made in this article to go into minute technical details of electro-coagulation; but it is absolutely essential that a high frequency machine be employed of suitable capacity for coagulation work, of which there are a number of efficient standard makes on the market. The machine must be accurately set to deliver proper current, and the operator must be thoroughly familiar with the capabilities of the individual machine he employs. Foot-switch control is an absolute essential. I do not find it necessary in the average case to employ any pre-operative sedation for coagulation work on the tonsils, because, with adequate local anesthesia and explanation to the patient of the technic, there is no shock and no fright.

There are several methods for placement of the indifferent electrode. The operator should employ the procedure which suits him best in this regard. A Dillinger, Plank or other suitable electro-surgical needle is employed as the active electrode, with the patient seated upright in a wooden chair with headrest. Exposure of the tonsil and protection of the pillars is greatly facilitated by employment of the new insulated tonsilloscopic tongue depressor, a combined pillar retractor and tongue depressor. The patient's throat is sprayed four or five times at intervals of a minute or so with a 2 per cent nupercaine-epinephrin solution; this quickly anesthetizes the pharyngeal mucous membrane and quiets down the gag reflex. Then the tonsil and pillars on the side to be treated are swabbed a few times with the same nupercaine solution. As a rule, one tonsil is treated at a time, the patient returning in one week, when the opposite tonsil is treated. Excess saliva and mucus may be controlled by atropine; but suction cleansure of the pharynx may be effected very easily as needed by a foot-switch controlled air suction pump with the aspirator suspended conveniently at hand from an overhead cable.

Field of operation may be illuminated by an electric headlamp or with the ordinary reflecting head mirror. Under direct inspection the active electrode needle is placed accurately wherever desired in the tonsil and the foot-switch pressed down. Coagulation about the needle point should be practically instantaneous; if not as desired with the first contact, the machine adjustment may be changed to suit. Top of the tonsil is quickly covered, points of coagulation being placed about one-sixth inch apart and the needle point carried into the tonsil tissue about one-eighth inch. Care must be taken to keep coagulation away from the pillars. Much skill and experience is naturally required with tonsils that are badly adherent and deeply submerged, but with proper care and technic such tonsils may be perfectly removed without damage to pillars or underlying throat structures. Before each treatment, it is good practice to suction clean all tonsils of pus and contained crypt exudate. After treatment, the tonsil may be swabbed over with brilliant green, acriviolet, or other suitable antiseptic. The patient is given a

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supply of nupercaine throat lozenges to control any after discomfort, which is usually of minor import. The throat may be gargled several times daily with Dobell's Seiler's, Alkalol, or other suitable solution; otherwise, little post-operative attention is required. Immediately after treatment the patient is free to return to his or her usual vocation, as there is no bleeding or other troublesome complication.

A week later the patient returns for treatment of the second tonsil, and these weekly treatments are alternated from one tonsil to the other until both are completely and perfectly removed. After each tonsil has received about three treatments, they have usually been shrunk up and so far removed that both may now be treated at the same sessions without causing appreciable sore throat. As we verge upon complete removal of the tonsil, treatment naturally requires more skill and judgment in depth to which the coagulation is allowed to proceed; but with proper technic the removal is perfect and the throat anatomically and cosmetically left in perfect shape.

This is not always the case after surgical tonsillectomy, as we all must admit. We may remove the tonsils perfectly in capsule, with the pillars intact and standing clear as though graven in stone, and then find, when healing is complete, that scar tissue formation has drawn one pillar or the other out of shape; or perhaps the uvula no longer hangs evenly in mid-line. This, of course, does not refer to cases where the pillars or uvula have been mutilated or partly removed at operation, in which event a cosmetically perfect throat could not be expected to begin with. If there is one error that beginners are prone to make, it is to over-coagulate. It is always safest and best to under-coagulate, because an additional treatment or two is of little moment from the patient's standpoint, if indicated.

For removal of stumps and fragments residual after incomplete tonsillectomies, electro-coagulation is ideal, the technic in general being the same as for complete tonsil removal.

I tell my patients that, from a time and efficiency standpoint, local anesthesia suction tonsillectomy is far easier for me, because, after throat spray anesthetization, only a few minutes more are required for peritonsillar anesthetic injection and suction removal of the tonsils—all at one session. With the coagulation method, from five to six treatments of each tonsil may be required over a period of from four to six weeks—a considerably greater time consumption for any busy doctor.

Our primary regard, however, must always be for the comfort and safety of the patient: and on that basis, if no other, there can be no question but that multiple-stage electro-coagulation removal of the adult tonsil under local anesthesia is a most valuable addition to the armamentarium of any conscientious tonsil surgeon, so much so that we should all discard hasty judgments and erroneous ideas on the subject and *see for ourselves*. The saying is that "You cannot teach an old dog new tricks," but the conscientious physician never becomes too old to eagerly study and evaluate the newer and possibly better developments in medicine and surgery.

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6075 *Montgomery Road.*

SNAKE-BITE POISON.

OTIS MARSHALL, M. D., Washington, D. C.
First Aid Representative, American National Red Cross.

A student attending the American Red Cross Institute at Brevard, N. C., while standing in the water's edge, listening to a swimming lecture, reached to the bank for a notebook, when she was struck by a moccasin. The two punctures passed through her bathing suit and into the connective tissue, left lower quadrant of the abdominal wall. There was immediate local tenderness, increasing in severity, until quite painful to the slightest touch. In fifteen minutes there was a redness of the skin, but

no constitutional reaction. This redness was about three inches in diameter. At this time incisions were made about one-eighth inch in depth and criss-crossing the punctures. Cupping was done by burning paper put into a small glass to make a vacuum, and glass quickly inverted over the incision. This was repeated several times until the area was quite well bled. Fifteen or twenty minutes later the redness had spread towards the ribs. Some lymphangitis and oedema was present at this time. Incisions were made near the ribs, and bleeding by cupping. By this time the tenderness had greatly increased and there was extreme pain on the slightest palpation. Redness increased near the ribs, but faded in the area of the first incision. There was no shock nor general disturbance at this time.

Anti-venin, 30 c.c. was given into the red area. Two hours after the bite the patient was slightly nervous, somewhat anxious, but on the whole philosophical and cooperative. Three hours later temperature 99 and pule 100. Aromatic spirits of ammonia was given at this time. The temperature rose to 101½° eight hours after the bite, and pulse 126. The patient was exhausted and had a severe headache. The ammonia was repeated several times. A hypo of morphine 1/6th of a grain, and atropine 1/200ths of a grain, was given. By this time the redness around the first incision had about disappeared, and by the next morning was much paler near the ribs. Twenty-four hours later the redness was very slight. Eighteen hours after the bite the temperature was 99-2/10°. Twenty-four hours after the bite the temperature was normal and thirty-six hours after the bite sub-normal. The pulse gradually became stronger and slower. The fourth day the patient was slightly weak and the area of the bite was quite tender. Seven days from receiving the bite the patient was fully recovered. No facilities were at hand for a blood study.

To me it was quite interesting to observe the time elapsing between the local and constitutional symptoms. The extreme exhaustion occurred seven hours after the bite and continued for twelve hours later. The acute local tenderness remained for several days.

Laughter seems to be of real value in the treatment of the worrier. Cheerfulness is a great tonic.—*Selected.*

Miscellaneous

Outline of State-wide Diphtheria Immunization Program.

In view of the increased incidence of diphtheria in Virginia in the past few months, a number of citizens have expressed a desire to have effective measures instituted for the control and eradication of the disease. When these appeals reached the State Department of Health, Dr. Warren F. Draper, Commissioner of Health, wrote the president of the Medical Society of Virginia, Dr. I. C. Harrison, presenting a plan outlined by the Department of Health, and asked his opinion as to presenting this to the physicians of the State. Thereupon, Dr. Harrison called a meeting of the Council of the Society and had Dr. Draper appear and present his plan which he stated was a suggestion which might lead to a joint program between the doctors of the State and the State Board of Health for diphtheria immunization and pre-school clinics. He said that it was the usual experience that such a plan increased the work of the private physician. It was distinctly understood that compensation for the work done in each county should be fixed by the physicians cooperating in the campaign, the State Health Department furnishing the toxin-antitoxin or toxoid at the stated cost of $.086 per complete immunization. The plan was discussed and commended by all the councilors, following which a motion was made and adopted that the Council endorses Dr. Draper's plan for diphtheria immunization clinics throughout the State, in the counties and cities, and recommends the whole-hearted support of the Medical Society of Virginia in carrying out the project.

Dr. Draper's Letter to Dr. Harrison

"Because of the marked increase of diphtheria within the State during the past few months, and the expressed concern of many citizens in having effective measures carried out for the control or eradication of this disease in future years, the State Department of Health desires to present to the physicians of the State, through the Medical Society of Virginia, a plan whereby the resources of the State and local health agencies may be made available to aid the physicians in administering diph-

theria immunizations to a considerable proportion of the children of the State between the ages of six months and fifteen years.

"The outline of the plan which is presented for your consideration herewith stipulates only those services which the physicians may expect from the health departments and does not attempt to indicate the manner in which the physicians' services should be rendered nor the charges which should be made. It is our hope that these matters will be determined by the physicians of the State through their representatives in the several medical organizations.

"Representatives of the State Health Department will be glad to participate in any discussions of the proposal in which it is believed that they can be of assistance.

"I hope that this proposal may result in action which will accomplish a sufficient number of diphtheria immunizations to materially affect the incidence of this disease during the next season and that it may serve as a basis for the development of future successful cooperative enterprises with the physicians of the State."

Outline of State-Wide Diphtheria Immunization Program, Approved by the Medical Society of Virginia, to be Conducted by the Physicians of Virginia, in Cooperation with State and Local Health Authorities.

Cooperation of the State Department of Health

1. Arrange for the distribution of toxoid or toxin-antitoxin at the price of $.086 per complete immunization.

2. Prepare educational and publicity material regarding diphtheria immunization and secure publication in newspapers and other publications throughout the State.

3. Provide the services of public health nurses to work up the program in counties in which no public health nurses are employed.

4. Provide the services of a clinician skilled in diphtheria immunization technique to hold demonstrations and consultations with physicians who desire such services.

5. Provide direction and supervision of public health personnel engaged in the program and serve as the clearing house for all questions arising in connection with the work.

Cooperation of Local Health Agencies

1. The county health officer or public health nurse will arrange with the secretary of the county board of health to call a meeting of the county physicians to formulate a program of diphtheria prevention clinics in the county.

2. They will communicate with the division superintendent of schools to arrange for the cooperation of the school teachers in furthering the work.

3. They will secure from the superintendent of schools a list of the schools in the county, white and colored, and work out with him a provisional schedule of clinics to cover the county. This schedule will be submitted to the physicians at the meeting called by the secretary of the county board of health.

4. Before clinics are held the county nurse will visit every school in the county and give talks on diphtheria prevention, either to the teachers as a group or with the sanction of the school principals to the whole school assembled, explaining the nature of diphtheria and stressing particularly the need of immunization. She will ask the help of the teachers in getting younger children to the clinics.

5. The county nurse will take to the schools the program of the clinics together with literature, explaining diphtheria prevention. The distribution of the programs and literature will be accomplished through the teachers.

6. The health officer or nurse will issue in the local press an article or several articles dealing with diphtheria prevention and telling of the clinics to be held in the county. (The article on diphtheria prevention will be furnished by the State Department of Health.)

7. The county nurse will arrange with the chairman of the Parent-Teacher Association and also with the School Leagues throughout the county to help in the program.

8. The county health nurse shall call on the ministers and Sunday school superintendents throughout the county, asking for their active cooperation and supplying them with literature from which they can make speeches regarding the campaign.

9. Following the clinics, and in the future, as a matter of routine, on all visits the county health nurse should recommend that all young children should be taken to their family physician to be immunized against diphtheria.

10. The county health nurse will attend the clinics conducted by the local physicians and will see that accurate records are kept of the number of children immunized. A report giving a full account of the clinics with the num-

ber of children immunized will be forwarded to the State Department of Health. (Report blanks will be furnished the nurse from the Department.)

As evidence of the heavy incidence of diphtheria this season, Dr. Draper furnished diphtheria figures for the years 1913 to 1931, inclusive. This table gives the case incidence for eleven months and the death total for only ten months. Cases reported in November and December seem to make it certain that the final mortality figures for 1931 will exceed the 1929 total.

During the Fall of 1926 and Spring of 1927, the last general immunization campaign was conducted. The result of that work was that in 1927 a low record for diphtheria occurred in the State and this notwithstanding a general rise throughout the country. Reference to the table shows that the case total for eleven months of 1931 exceeds any twelve months' total since 1923.

STATE OF VIRGINIA
DIPHTHERIA

Year	*Cases*	*Deaths*
1913	3,313	302
1914	3,600	340
1915	5,326	374
1916	3,160	316
1917	2,438	221
1918	1,543	216
1919	3,314	278
1920	4,379	334
1921	5,789	399
1922	7,109	463
1923	4,656	337
1924	3,287	216
1925	3,065	238
1926	3,111	228
1927	2,634	154
1928	2,359	186
1929	2,625	214
1930	2,217	172
1931*	3,905	110

*Cases through November.
Deaths through October.

We hope all Virginia doctors will cooperate in the furtherance of this plan which, after an interested discussion in your Council meeting, received the full endorsement of that body.

Rockbridge County Health Testing Program.

The health of the school child has received considerable attention in the past few years. As a result of this some very excellent work has been done. I wish to call the special attention of any who may be interested in child health to the following health summary by Dr. Charles E. Myers, State Department of Education, of the report of Superintendent R. M. Irby, of work done in Rockbridge County, Virginia, in 1930-31:

(Signed) W. P. JACKSON, M. D., *Chairman,*
Child Welfare Committee, Medical Society of Virginia.

Mr. R. M. Irby, Superintendent of Rockbridge County Schools, Virginia, has found that his health program which he has emphasized for several years pays big dividends in better pupil progress and in lower school costs.

Rockbridge County has had a standard Virginia Health Unit at work for five years. A county nurse had been employed in 1920, but had not worked continuously until the health unit was organized in February, 1927. The unit consists of a health officer, a sanitary engineer, a nurse and a clerk. Though this health unit is not a part of the school organization, its program is coordinated with the general educational program of the county and much of its work is done in the schools or through cooperation with them.

Under these conditions the health of the school children has been definitely advanced as measured by the "Five Point" program. A child is a "Five Pointer" if his eyes, ears, teeth, nose, throat, and weight meet definite standards or receive specified medical attention. During the past four years the number of "Five Point" children in Rockbridge County has been increased from 258 or 6 per cent of the enrollment in 1926-27 to 1400 or 28 per cent of the school enrollment ni 1930-31. Similar percentages for the State of Virginia are 8 per cent and 22 per cent for 1927 and 1931, respectively. Superintendent Irby's comparisons are made with the fifth, sixth and seventh grade pupils.

In educational advancement as measured by the Otis Classification Test and weighted for the pupils' abilities to learn, the "Five Point" pupils:

In the fifth grade are 3 months ahead of the defective group.

In the sixth grade are 8 months ahead of the defective group.

In the seventh grade are 12 months ahead of the defective group.

The percentage of failures in the defective groups is greater than in the "Five Point"

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groups. The tabular statement below presents the facts:

NUMBER OF PUPILS, PER CENT "FIVE POINT" PUPILS, AND PER CENT OF "FAILURES"

Grade	No Pupils	Per Cent "Five Pointers"	Per Cent Failures "Five Pointers"	Defectives
5	375	45	23	29
6	314	54	13	28
7	316	56	14	24
Total	1005	49%	17%	27%

Superintendent Irby estimates that one-third of the failures in his county are due to defective health, and that the reteaching of these failures costs the county approximately $12,000 a year. The average defective child must spend one more year in school to complete the seventh grade than is required for the "Five Point" child. As measured by the subjective judgment of the teachers, represented by percentages failing, and as measured by standard tests, the "Five Point" group is far in the lead.

The two groups numbered 514 "Five Pointers," and 401 "Defectives." Hence the groups are evenly divided and large enough to give reliable averages. The differences are significant from every point of view and constantly and harmoniously point in the same direction.

A comparatively small expenditure for health service for school children not only brings big returns in reducing human suffering and increasing life but will go a long way toward stopping a serious financial and social waste caused by teaching and reteaching, and attempting to reteach children who are in no condition to learn. As a means of reducing waste of public school funds, if for no other purpose, an efficient health service should be maintained for all public school children.

Woman's Auxiliary, to the Medical Society of Va.

PRESIDENT—*Mrs J. Allison Hodges*, 5511 Cary Street Road, Richmond.

PRESIDENT-ELECT—*Mrs. W. P. McDowell*, Larchmont, Norfolk.

SECRETARY—*Mrs. James K. Hall*, 3911 Seminary Avenue, Richmond.

TREASURER—*Mrs. Reuben F. Simms*, 2034 Park Avenue, Richmond.

The Auxiliary to the Richmond (Va.) Academy of Medicine,

At its annual meeting on January 22nd, elected the following officers for the ensuing year: *President*, Mrs. Lee E. Sutton; *first vice-president*, Mrs. J. B. Dalton; *second vice-president*, Mrs. Austin I. Dodson; *secretary*, Mrs. Harry B. Hinchman; and *treasurer*, Mrs. J. W. Hannabass.

Mrs. N. Thomas Ennett, the retiring president, did a great deal of constructive work, during her term of office, for undernourished children. The closing event of her administration was a card party which netted quite a nice sum.

The Woman's Auxiliary to the Southern Medical Association

Held its eighth annual meeting in New Orleans, La., November 18-20, 1931. The president, Mrs. S. A. Collom, of Texarkana, Texas, presided. After greetings had been extended from the local and state auxiliaries, Mrs. A. B. McGlothlan, St. Joseph, Mo., national president, extended greetings from the Auxiliary to the American Medical Association and invited those present to return to New Orleans, in May, 1932, to attend the meeting of the Auxiliary to the A. M. A.

The chairman of Organization reported that there are fourteen States and the District of Columbia included in the S. M. A. group, with a membership of 4,947, and that all States were organized except Maryland. Interesting reports were also made by other committees.

Mrs. Charles E. Oates, Little Rock, Ark., succeeded to the presidency. Mrs. A. A. Herold, Shreveport, La., was elected president-elect; Mrs. J. Bonar White, Atlanta, Ga., recording secretary; Mrs. Mabel Mason, Lumberton, Miss., treasurer. The next meeting of the Auxiliary is to be held in Birmingham, Ala., in November, 1932.

AIMS AND PURPOSES OF THE AUXILIARY OF THE SOUTHERN MEDICAL ASSOCIATION

Mrs. C. W. Garrison, Little Rock, Ark., a former president, states that the aims and purposes of the Auxiliary are as follows:

"To keep the original aim constantly before the Woman's Auxiliary to the Southern Medical Association, to which may now be added the two projects—the Jane Todd Crawford Memorial and the collection of data for Romance of the Medical Men of the South, and to pursue these with a continuity of purpose until our efforts are crowned with ultimate success will be an objective worth all the time,

interest and energy expended in its accomplishment.

"If we can then come together in annual convention imbued with the spirit of the preamble to our constitution to hear and discuss reports of the progress made in the twelve-month period, the Association cannot but have each year a closer bond of friendship and sincere loyalty to a just and beautiful cause."

Items of Interest.

Each month, Mrs. Milton P. Overholser, of Harrisonville, Mo., chairman of the Committee on Press and Publicity of the National Auxiliary, sends out a news sheet with items of interest in regard to the work being done in the various States. Two features strongly stressed are "Liaison With Outside Groups" and the placing of *Hygeia*, the magazine for health, in as many schools and homes as possible. Student loan funds are promoted by some States and medical history comes in for its share of interest.

The following paragraphs are taken from Mrs. Overholser's last report:

"Of Kentucky's plan for a Jane Todd Crawford Memorial every Auxiliary woman (and every other woman) in the nation should be informed. Briefly this Memorial will honor that brave pioneer woman of Kentucky, who in December, 1809, before the days of any anesthetics, underwent voluntarily the first ovariotomy. The courage and skill of the surgeon, Dr. Ephraim McDowell, was met by the courage, faith, and self-control of this noble woman.

"The literally thrilling story of this operation has been placed in the hands of every State Auxiliary president. May some plan be evolved by which the story may be known by every Auxiliary woman in America.

"A monument to Jane Todd Crawford should be to all of us a symbol of courage, willpower, self-control and faith, qualities which she exemplified; and to share in the creation of this memorial should be esteemed a privilege."

"When you—the many of you—are in New Orleans, May 10th-16th and are looking at the 'exhibits' from the various State Auxiliaries, your attention will be arrested by the unique and very clever 'Formula' from Philadelphia. It must be seen to be appreciated, and its designer, Mrs. Wilmer Krusen, will understand the compliment implied when you construct a pattern of it to take back to the home Auxiliary. It constitutes a most alluring invitation to attend the Auxiliary meetings and share activities.

"In 1931 the National Tuberculosis Association issued a timely small folder 'Go to Your Doctor Before He Has to Come to You,' a folder that should be known and heeded by all men, women and children. It energetically supports the idea of Periodic Health Examinations. Pennsylvania has a Periodic Health Examination Chairman, Mrs. John H. Page, who is ably promoting this project and getting results. Here is her appeal:

PERIODIC HEALTH EXAMINATION

"One out of six applicants for life insurance are declined or postponed. The annual health audit will detect albumin or sugar, high blood pressure, slight cardiac disorder, incipient tuberculosis, beginning neoplasm, and any and everything else. Your family physician will do the rest. Why does it profit a person to be an ostrich with his ailments, or like the Spartan youth to hide a disease until it gnaws out his vitals? Get the disease before it gets you. Get it early. Get it before you think you have it.

"People have too long had such faith and confidence in their physician that they think he can cure anybody who has not been dead over three days. The profession admires the faith of their clientele, but dislikes to be put in such superlative and unequal tests.

"If elevators are inspected regularly, why not one's mouth and teeth? If a boiler must be examined regularly, why not your heart and lungs? You have tested the brakes on your car, why not the kidney function? You have your watch regulated, but not your diet. You have your batteries charged, but let your weight run down from disease.

"Should the most complex and wonderful machinery in the world, that not made with hands, be allowed to become broken or impaired, to corrode or degenerate? Neglect your business if you must, neglect your golf if you can, neglect your wife if you dare, but don't neglect your physician and a yearly physical examination and health inventory on your birthday."

National Meeting.

At the meeting of the Auxiliary to the

Southern Medical Association in New Orleans in November, 503 women registered. All had a delightful time in that lovely Southern city.

The National Auxiliary is to meet there May 9th-13th, at the time of the American Medical Association. No one who can attend this convention should miss it as it will be a wonderful opportuntiy. Get "your doctor" to plan to attend and to take you.

Hygeia.

This is a splendid magazine for the layman as well as the doctor's family and is already in many Virginia homes and schools. We wish, however, to have many, many more subscribe to it. Ask your local chaiman about it.

Memorial File.

At the meeting of the Board of Directors of the Woman's Auxiliary to the American Medical Association in Chicago, last November, it was voted that "each state president be asked to appoint a chairman to send in at the end of the fiscal year to a National Chairman, appointed by the president, the names of those state Auxiliary members who have passed away."

The national office wants to clear the membership files of names of deceased members and place these names in a memorial file or book.

Each Auxiliary in Virginia is asked to report names of any members who have died to our State President, Mrs. J. Allison Hodges, 5511 Cary Street Road, Richmond, Va., *at once*, as she in turn has to report them to the National Auxiliary before April 1st. If you know of any member from the State at large who has passed on, some friend is asked to report that name.

Truth About Medicine

In addition to the articles enumerated in our letter of December 24, 1931, the following have been accepted:

Abbott Laboratories
  Ampoules Potassium Bismuth Tartrate—D. R. L., 2 c.c.
Ciba Co., Inc.
  Sugar Coated Tablets Lipoiodine—Ciba, 0.3 Gm.
Cutter Laboratory
  Diphtheria Toxin for the Schick Test, 10 test doses
  Tuberculin B. F. (Bovine)
  Typhoid Vaccine, 20 c.c. vial
Gane & Ingram, Inc.
  Phenobarbital Sodium—Gane and Ingram
  Tablets Phenobarbital Sodium—Gane and Ingram, 1½ grains.
Gilliland Laboratories, Inc.
  Scarlet Fever Streptococcus Antitoxin (Refined and Concentrated)
Lederle Laboratories, Inc.
  Brucella Melitensis Vaccine—Lederle
  Normal Horse Serum (1:10 Dilution) for the Conjunctival Test
Eli Lilly & Co.
  Diphtheria Toxin for Schick Test, Diluted Ready for Use—Lilly.
Mead Johnson & Co.
  Mead's Powdered Brewer's Yeast Tablets
United States Standard Products Company
  Antimeningococcic Serum Polyvalent
Winthrop Chemical Co., Inc.
  Sterile Solution Skiodan (40% by volume)
Nonproprietary Articles
  Brucella Melitensis Vaccine
  Phenobarbital Sodium

Propaganda for Reform

Ovaltine Not Acceptable.—The Committee on Foods reports that Ovaltine is a chocolate flavored dry malt extract, containing a small quantity of dried milk and egg, which is sold with two slogans: "A food beverage" and "A food concentrate." From its examination of the product, the Committee concludes that Ovaltine is essentially a carbohydrate food, and that its value in gaining weight is no more nor less than that of other similar carbohydrate mixtures, and that Ovaltine is sold with grossly exaggerated claims; its composition is kept a mystery, and that even if it did contain what the manufacturer says it does, it could not do the things the manufacturer says it will. The Committee has listed Ovaltine with the products not acceptable. (Jour. A. M. A., December 12, 1931, p 1798).

Panaceas for the Common Cold.—With the first blasts of wintry air a considerable number of our citizenry begin to develop the running of the nose, the lacrimation, the depression, the fever and the other symptoms commonly associated with the onset of a cold. From the teachings of the hygienists, the sanitarians, the public health writers and physicians, most of the public have learned that the symptoms can be abated and the cold controlled in the majority of instances if the patient will go promptly to bed and stay there for at least three days. However, few follow this advice. The promoters of various types of devices and foods associated with health maintenance have been prompt to take advantage of every possibility for exploiting their materials in connection with the universality of the common cold. Vitamin D has been vaunted for this purpose in the form of ultraviolet rays, cod liver oil, cod liver oil concentrates, irradiated foods and whatnot, notwithstanding the fact that there is not the slightest scientific evidence to indicate that excess of vitamin D will prevent a cold or have any effect in curing it. Because of reports that in mice an excess of vitamin A favorably affects the tissue of the respiratory tract, the National Dairy Company through one of its susidiaries, advocates the use of milk as a means of preventing colds; for this claim there is not adequate evidence. (Jour. A. M. A., December 12, 1931, p. 1802).

The Intravenous Use of Barbital Compounds.—The Council on Pharmacy and Chemistry reports that more than seven years have elapsed since the introduction of the intravenous use of barbitals, sufficient time to justify an assay of the possible value of the method. Since the chief object of the intravenous use has seemed to be the possible employment of barbitals used in this way to produce anesthesia, the Council reports on the possible changes following intravenous injection, a compari-

son of the experimental and clinical results, and attempts to determine if the intravenous use has peculiar advantages over other methods of administration, with equal safety. The Council points out that there is no doubt that the characteristic hypnotic action of the barbitals can be obtained by oral administration; that since the barbitals act essentially as hypnotics, and not as anesthetics, it is reasonable to entertain doubts about radical departures from the orthodox usage of these drugs, but the new methods of using and new uses for well-known drugs merit attention; and that, moreover, the intravenous use of barbitals has been widely exploited by some manufacturers and serious attention has been given to the subject experimentally and clinically. From an exhaustive review of the literature it is concluded that any advantages that may exist in the choice of barbitals as aids in anesthesia, or as sedatives, analgesics or hypnotics, can be easily procured by giving them by mouth, with the further advantage of avoiding the necessity of the small operation and aseptic technic for intravenous injection and the unnecessary disturbances and complications of such injections in general, and that about the only argument in favor of the intravenous route would be an occasional rapid action in an emergency, and that hence their intravenous use should be limited for the present to conditions in which oral administration is not possible or when a very prompt action is imperative. (Jour. A. M. A., December 19, 1931, p. 1886).

Malignant Conditions in Radioactive Persons.—In 1925, Martland reported cases of anemia and of necrosis of the jaw in persons who had been employed in painting watch dials with paint made luminous by the addition of radium, mesothorium and radio-thorium. During several years previous to 1924, 800 girls did such work in a New Jersey factory. The girls swallowed small amounts of radioactive paint day after day as a result of pointing the brushes with the lips. Some who had worked for one or more years developed necrosis of the jaw and anemia, from which, up to 1928, thirteen died. Now, however, another pathologic condition seems to have arisen among the employees who swallowed radioactive paint. Since 1928, rapidly growing osteogenic sarcomas have appeared in at least eight cases. In consideration of recent developments the high incidence of primary carcinoma of the lungs in the cobalt miners of Schneeberg and in the pitchblende mines of Joachimstahl, and the various lesions produced by external exposure to radium and X-rays, demand investigation, and many of the radioactive substances sold to the public for the cure of various ailments may be dangerous to health. Testifying against the interstate sale of vials of mesothorium and radium which were to be injected after being dissolved in water, Martland reported that he had examined two patients who had taken such water from one to two years and found both to show radioactivity, and both had extensive necrosis of the upper jaw. Martland states that waters which contain only emanation are frauds and he doubts whether they are harmless. The drinking over long periods of time of radioactive waters containing radon, and the drinking of natural radioactive waters, should be discouraged. Martland likewise cautions against the intravenous injection of long lived radioactive elements. (Jour. A. M. A., December 26, 1931, p. 1968).

Oysters—A Pleasant Type of Therapy.—The announcement three years ago that copper is effective in supplementing iron in the cure of anemia produced by an exclusive milk diet in the rat promptly aroused interest. The inferences drawn by others than the investigators themselves has led to confusion and mistaken advice. There has been no warrant whatever in applying the observations without reservation to some of the unusual conditions of the blood, such as pernicious anemia in man. At the moment there is some debate whether copper stands alone in the capacity to promote the function of the iron in hemoglobin and blood cell formation. Other elements, such as manganese and germanium, are clamoring for equal recognition. Meanwhile all sorts of new products containing both iron and copper are foisted not only on the ignorant public but also on an uncertain medical profession. The chief objection to such unproved therapy is the sense of false security which leads to the neglect of other modes of therapy that may be far more effective. Recent investigations have shown oysters to be capable of curing the nutritional anemia of milk-fed rats. The studies indicate that the inorganic elements present in the oyster are responsible for its hemoglobin regenerating capacity and that the antianemic potency of the oyster can be accounted for on the basis of its content of the three elements, iron, copper and manganese. (Jour. A. M. A., December 26, 1931, p. 1970).

Book Announcements

Surgical Errors and Safeguards. By MAX THOREK, M. D., Surgeon-in-Chief, The American Hospital, Chicago; Attending Surgeon, Cook County Hospital, etc. With a Foreword by ARTHUR DEAN BEVAN, M. D., Professor and Head of the Department of Surgery, Rush Medical College of the University of Chicago. Philadelphia. J. B. Lippincott Company. 1932. Octavo of 696-xiii pages. 668 Illustrations, many colored. Cloth. Price, $10.00.

The Story of Medicine. By VICTOR ROBINSON, M. D., Professor of History of Medicine, Temple University Schools of Medicine, Philadelphia. Albert & Charles Boni. New York. 1931. Octavo of 527 pages. Cloth. Price, $5.00.

Psychology and Psychiatry in Pediatrics: The Problem. Report of the Subcommittee on Psychology and Psychiatry, Bronson Crothers, M. D., Chairman. White House Conference on Child Health and Protection. The Century Co. New York. 1932. Octavo of 146 pages. Cloth. Price, $1.50.

Body Mechanics: Education and Practice. Report of the Subcommittee on Orthopedics and Body Mechanics, Robert B. Osgood, M. D., chairman. White House Conference on Child Health and Protection. The Century Co. New York. 1932. Octavo of 164 pages. Price, $1.50.

Origin of Cancer. The Specific Cancer Cell of Carcinoma, Contrasted with the Normal Matrix Embryonal Cellule of Primal Ovum Days, to Eighth Week; From Which the Cancer Cell is Directly Descended. Cancer Not Epithelial. Sarcoma Not Connective Tissue. By FRANK A. STAHL, M. D., Rush, 1887. One-time Demonstrator of Obstetrics, Rush Medical College, Chicago, Illinois. 1932. 49 Plate Illustrations, 41 Personal and Original With Explanations. Octavo of 96 pages. Paper.

XUM

Virginia Medical Monthly

FOUNDED BY LANDON B. EDWARDS, M. D., APRIL, 1874
OWNED BY MEDICAL SOCIETY OF VIRGINIA SINCE NOVEMBER, 1919

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All correspondence regarding editorial matters, articles, advertisements, subscription rates, etc., should be addressed to the Monthly, 104½ West Grace Street, Richmond, Va.

All advertisements are received subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association.

Subscription Price: $2.00 per annum in advance. Single Copies 20c.

VOLUME 58 MARCH, 1932 No. 12

Editorial

Primary Carcinoma of the Lungs.

A recent paper* directs attention to this rare disease of the lungs. It is of interest particularly for the reason that attention is drawn to a group of signs, symptoms and history, suggestively characteristic. Such a grouping is always worthwhile for the general practitioner and physician. To them physical findings of the chest are a daily consideration. To them discussion or review of findings in the examination of the lungs offers occasion for thought and study. The author points out that in cases of carcinoma, if uncomplicated by coexisting tuberculosis (a condition often prevailing), the patient, being of cancerous age, holds that only for a short time have there been any pulmonary difficulties. Usually, the story begins with an attack of recent bronchitis or pneumonia. Since this, these patients usually say they have never been free of one or another sort of lung symptom. There may have been several attacks of pneumonia. There has been usually pain; pain over the lung has been persistent. There may have been hemorrhage; hemorrhage may have been small in amount but persistent or it may have been copious. There may have been dyspnea appearing gradually or suddenly, associated often with asthmatic signs. Besides, physical examination usually discloses: (a) high position of the diaphragm on the affected side; (b) paradoxical respiration with a seesaw movement of the diaphragm; (c) pendulum movement of the heart, influenced in its swing by being drawn to the affected side during inspiration and to the opposite in expiration; (d) coalescence of flatness of infraclavicular region with substernal heart distress. The author reports six cases illustrating the points of his text. In these histories practitioners may find examination-reports of interest in impressing the "ear marks" of this rare pulmonary disease. The remembrance of certain general groups of signs and symptoms can but aid one in his quest for a diagnosis in the rarer and more unusual diseases of the chest.

*Palevski: **Arch. Int. Med.**, Vol. 48, No. 6, page 1126.

Roentgenologic Diagnosis of Early Pulmonary Tuberculosis.

Almost all cases of incipient tuberculosis in adults, says Kirklin,† may be divided in o two groups. Any such generalization arrests the attention, naturally, of the practitioner. One notes that in the first group, which is by far the greater, the earliest significant sign is a relatively faint shadow in an upper lobe, more often the right. Stereoscopically, this dense region (or shadow) is conical in shape with its base toward the periphery and apex toward the hilum; it is obliquely below the clavicle, usually in the first, but occasionally in the second interspace. Its appearance has been likened to that "of a caterpillar's web woven about an outer branch of a tree."

In the second group, lesions are more or less spherical in form and are situated in the outer parenchymatous portion of the lung; they are multiple, grouped variously but some-

†Proceedings of the Staff Meetings of the Mayo Clinic, December 2, 1931, page 709.

times singly with a diameter from one to two m.m. These are faint shadows but denser in the center than at the periphery.

To sum up, the X-ray diagnosis of an early tuberculous infection rests upon a combination of its location below the clavicle; the roughly conical or spherical form of the lesions; the softness and lack of marginal definition of the shadows; and an accentuation of the tributary broncho-vascular structures.

Bronchiectasis, malignant metastasis, accentuation of broncho-vascular markings without corresponding parenchymal shadows, localized simple pneumonitis, notes Kirklin, are conditions simulating the early signs of pulmonary tuberculosis of the lung and should be kept in mind in considering such findings.

Spontaneous Pneumothorax.

The management and treatment of chronic tuberculous patients brings the physician often face to face with a sudden change in the clinical picture. This change may be produced by a sudden or gradual accumulation of air in the pleural sac.

Pneumothorax of some proportion changes materially physical findings of a chest and is a phenomenon that may mystify the clinician for the moment if not for a longer period. It is a clinical entity that often appears suddenly. Accumulation of air in the pleural cavity changes the chest pattern to inspection, palpation, percussion and auscultation. Inspection brings out the fixation of the affected side; the great dyspnea, the cyanosis, the protrusion of the heart to the intercostals in the right when pneumothorax is in the left. Palpation discloses an absence of tactile fremitus, and elicits the liver in right-sided pneumothorax well down from the costal margin. Percussion brings varied sound phenomena. These signs are varied and modified by the side affected, by tension with the pleural cavity, by the amount and location and changing levels of fluid as the body assumes a change of position. The character of the fluid whether serous or purulent brings a difference in the levels, the latter being less changeable. Percussion notes obtained may be tympanitic at one level and dull at a lower level on the chest. Auscultation reveals feeble, distant breath sounds or an absence of breath sounds. In these there may be sounds of an echoing, amphoric or cavernous quality. Vocal fremitus is absent or diminished. The succussion splash, the metallic tinkle, the water whistle noise (broncho-pleural f'stula), may be elicited. Diagnosis is more difficult in case of small pneumothorax but in large pneumothorax, physical findings may be much more easily brought out and interpreted. The X-ray examination of such patients clearly visualizes the collapsed lung and the presence of fluid, if in any considerable amount. The aid of the roentgenologist is important in these cases and should be sought without delay, but in some instances in private practice in small towns or country sections, the physical findings must be depended upon.

Causes of pneumothorax may be arranged in the following manner: Tuberculosis, clinically demonstrable or not, is the most common cause. It is generally agreed that tuberculosis is present as a cause in 80 to 90 per cent in the adult. Among other causes, some of which may be associated with tuberculous pathology, are empyema, gangrene, pneumonia, pulmonary infarct, bronchiectasis, emphysema. Besides, there are a group of pneumothoraces which are called idiopathic. But idiopathic cases, it is believed, are so called because there has been inadequate diagnostic inquiry. These cases are probably due to tuberculosis or pulmonary infection, in one or another form. In addition to tuberculosis or other of these fundamental etiologic factors, exciting acts as coughing, sneezing, laughing, vomiting, hiccoughing, muscular strains, and forceful defecation act as immediate causes of the rupture.

Besides, in its association with tuberculosis, pneumothorax may take place without striking symptoms. Very insidiously, air may accumulate in the pleural sac without knowledge of it by physician or patient, at the outset. In other cases, the symptoms occurring at the time of such exciting causes as coughing, sneezing, vomiting, laughing, etc., are a feeling of stifling pain, sudden and knifelike, air hunger, feeling of suffocation; probably cyanosis and labored breathing. Such patients cannot be satisfied or comforted. No position relieves, lying down or sitting up—finally, only getting down on the affected side relieves. Within twenty-four hours pain is less but a sense of dullness and fullness takes its place and a few days after the onset signs of accumulation of fluid at the base, and air pressure above, appear.

XUM

Syphilis of the Lung.

A recent article by Denman,* discussing this subject and reporting a case of autopsy findings of it, furnishes us with subject matter for comment.

The rarity of the disease makes its review somewhat more interesting for, in doing so, one may consider the inquiry recently made and submitted to the reading medical public. The history of the case that forms the basis of the paper is worth reading for it gives a background for the findings, by X-ray and autopsy. The condition is rare and is seldom discovered in clinical examination. Denman states it is reported, in a search through the museums of the London Hospital and the Royal College of Surgeons, that only twelve cases were found with two of these doubtful; that Johns Hopkins Hospital reports only twelve cases in 2,800 autopsies; that in Massachusetts General Hospital's 3,000 autopsies, only one case was found; that in Symmers' study of 4,800 autopsy protocols, with 314 showing lesions of syphilis, there were twelve cases and two additional of syphilis of the pleura; that of 110,258 admissions to Kings' County Hospital (1919-1925), the number of cases diagnosed by positive Wassermann reactions was 5,695, but that none of these cases were diagnosed as syphilis of the lung. This gives an idea of the rarity of the condition. But it does occur and probably occurs oftener than recognized.

It may occur in its congenital form, the pathology being in the form of a diffuse fibroplastic proliferation with an interstitial infiltration of small round cells. In this type in the still-born the condition has been called white pneumonia.

In the acquired form, there is a chronic interstitial pneumonia (syphilitic phthisis). The process may be in the form of gummata. Rössle, reports Denman, differentiates four types: a cavernous syphilitic phthisis, a gummatous coarse fatty form, a coarse lobulated syphilitic scarred lung, a coarse syphilitic callosity without pronounced changes of the exterior shape.

Finally, a paragraph from Denman's paper makes the matter of diagnosis of interest by stating that the diagnosis of pulmonary syphilis by roentgen ray is difficult because there is no characteristic picture, that the diagnosis should be made only by the history, a positive Wassermann reaction, and the result of an antisyphilitic course of treatment, that in all cases, pulmonary syphilis should not be diagnosed until "every other possible type of pulmonary disease is excluded."

*Denman—Annals of Internal Medicine, Vol. 5, No. 7, page 895.

Pulmonary Tuberculosis With Indefinite or no Usual Abnormal Physical Signs.

The chest remains largely the responsibility of the family physician and the general practitioner. For it is the family physician, probably, who first is consulted about pulmonary symptoms or about symptoms of a general constitutional nature. In these times, especially, must the practitioner be on the lookout for such indefinite and obscure conditions as an ill-defined pulmonary tuberculosis, because with economic conditions as they are, the probability for delay in consulting physicians is extremely great. Pulmonary tuberculosis with indefinite or no usual abnormal physical signs may be present. Only very careful examination by physical methods and coincident roentgen ray examinations will disclose certain cases of early pulmonary tuberculosis. Following upon a winter with its infections of the respiratory tract, one may wisely keep in mind the extreme possibility for pulmonary tuberculosis activity. An article on this subject by Lawrason Brown,* of Saranac, emphasizes the importance of careful scrutiny of suspected cases by the roentgen ray studies of the chest. He lays considerable emphasis on roentgen ray examination. It is only by this method in conjunction with careful physical examination that cases of pulmonary tuberculosis may be gotten under treatment in time to bring about an arrest of the process or the establishment of a cure. Brown reports the incidence of five cardinal diagnostic data in 1,367 cases diagnosed pulmonary tuberculosis from 1,478 consecutive cases admitted to the Trudeau Sanatorium:

Tubercle bacilli	61.5 per cent.
Rales	68.5 per cent.
Roentgen ray	99.0 per cent.
Hemoptyses	33.5 per cent.
Pleurisy	12.0 per cent.

*A. J. M. Sc., November, 1931, page 700.

Department of Clinical Education
OF THE MEDICAL SOCIETY OF VIRGINIA

Report of Annual Meeting.

Six of the seven members of the Department attended the annual meeting on January 21st: Drs. Call and Draper, representing the Medical College of Virginia and the State Department of Health, Drs. Flippin, H. S. Daniel and R. A. Moore, representing the Medical Society of Virginia, and Mr. Eutsler, Executive Secretary. The present and past presidents of the Society, Drs. Harrison and Hodges; Dr. Sutton, Chairman of the Joint Committee on Prenatal and Postnatal Instruction, and Dr. Baughman and Miss Edwards were also in attendance.

Dr. Harrison reported that, acting under the constitutional power of the president to appoint all committees of the Society, he had consulted with the members of the Advisory Board of the Department of Clinical Education (the Standing Committees on Medical Education and Hospitals and on Scientific Work and Clinics) and with their consent appointed Drs. Daniel and Moore to the vacant positions as representatives of the Society in the Department. The House of Delegates at Roanoke had adopted a resolution instructing the president to appoint "two country physicians" to membership on the Joint Committee; since this Committee is a subsidiary of the Department and the Society's representatives on it had heretofore been drawn from the Department, it was necessary that the "two country physicians" should also be members of the Department.

The resolution of the House of Delegates contemplated the addition of two members to the Joint Committee, it was generally agreed, and the Department passed a motion that the membership of the Committee should be increased from six to eight, provided the two medical colleges cooperating agreed. The appointees of the president to the Joint Committee, Drs. Daniel, Moore and Hodges and Dr. Harrison ex-officio, were unanimously approved.

Dr. Sutton explained the status of the application by the Joint Committee to the Commonwealth Fund for a grant to aid in the work of prenatal and postnatal instruction. The answers to questions raised by representatives of the Fund in regard to the original proposal were approved as an excellent statement of the case. Dr. Draper explained that the next budget meeting of the Commonwealth Board would be held probably in April; the Board had expected to act upon the Joint Committee's application in December but the final papers had not been submitted. Upon his statement that he was to visit the offices of the Commonwealth Fund the next day and would have an opportunity to mention this matter, Dr. Draper was urged to make clear the fact of his membership in the Department of Clinical Education, the full support that would be given to the Joint Committee by the State Department of Health, the impetus gained by the instructional program on account of the general approval of physicians in the State Department's policy of distinguishing sharply between preventive and curative medicine, and the arrangement whereby the University Extension Division as the executive agency of the Committee would be charged with the responsibility of handling and disbursing funds upon the Committee's order.

A report of the Executive Secretary based upon information furnished by medical societies in the State indicated that the larger district and regional organizations seemed to be the groups with which the Department could most effectively cooperate, inasmuch as the urban societies had already developed systematic educational programs and those of the counties were generally inactive educationally. A list of available speakers had been requested by many secretaries and program committees. The preparation of a list composed of professors in the two medical colleges had been begun. In response to the Chairman's question as to whether the list should be confined to the faculties of these institutions, it was unanimously voted that invitations to take part in the work should be extended to every member of the Society.

The Department heartily endorsed the work of the Medical College of Virginia in making reference material available to speakers and physicians generally through a system of library loans.

GEORGE W. EUTSLER,
Executive Secretary.

An Invitation to Speakers.

In compliance with the action of the Department of Clinical Education as stated in the foregoing report, all members of the Medical Society of Virginia who feel that they can cooperate with the Department in holding clinics are invited to submit to the Executive Secretary their names and the subjects upon which they will speak. Members of the faculties of the two medical colleges will be enlisted, and it is desired that other physicians join with them in contributing their services to this movement. Complete lists of available speakers and subjects will be offered to all societies and committees arranging educational programs.

J. C. FLIPPIN,
Chairman.

Scheduled Meetings

The program of the regular monthly scientific meeting of the faculty and staff of the Medical College of Virginia, Richmond, which will be held on Thursday, March 17, 1932, at 8:15 P. M., in the auditorium of the St. Philip dormitory, will provide a symposium on Fungus Diseases.

The program will be as follows:

1. Dr. Frederick W. Shaw: Etiology and Pathology.
2. Dr. W. B. Graham (Invited Guest): Allergy.
3. Dr. Dean Cole: Respiratory System.
4. Dr. J. Powell Williams: Alimentary Tract.
5. Dr. Thomas W. Murrell: Skin and Appendages. (Lantern Slide Illustrations).

The profession is cordially welcome to these meetings. Upwards of a hundred were present at the January meeting.

All-Day Clinic

The Norfolk County doctors plan to have an all-day clinic, March 30th, in Norfolk, at St. Vincent's and the Protestant Hospitals for the Second Congressional District.

Dr. J. L. Rawls is chairman of this Clinic Committee and has arranged a special meeting for eight o'clock that night, at which time Dr. Daniel L. Borden, Professor of Surgery at George Washington University School of Medicine, Washington, D. C., will deliver an address illustrated with lantern slides.

Proceedings of Societies

Virginia State Board of Medical Examiners.

At the December, 1931, meeting of the Board, there were for examination only six, the smallest class for quite a long time. Of these, five obtained their certificates.

Of the remaining eighteen, fifteen were granted certificates through reciprocity, two upon the endorsement of the National Board, and one upon the basis of his commission in the Navy. Below is given list of applicants granted certificates:

APPLICANTS GRANTED CERTIFICATES

Dr. James Edward Amiss ---------- Luray, Va.
Dr. Charles Henry Armentrout ---------- Richmond, Va.
Dr. Wilbur A. Barker ---------- University, Va.
Dr. Albert T. Brickhouse ---------- Hopewell, Va.
Dr. M. Melvin Clark ---------- Richmond, Va.
Dr. Louis Philip Cox ---------- Fredericksburg, Va.
Dr. Alexander C. Davis ---------- Newport News, Va.
Dr. James Hugh Earley ---------- Washington, D. C.
Dr. Thomas A. Gibson ---------- Birmingham, Ala.
Dr. Herman Lee Harris ---------- Bluefield, W. Va.
Dr. Milton E. Holmes ---------- Washington, D. C.
Dr. Royal D. Keene ---------- Danville, Va.
Dr. Harvey W. Kline ---------- Philadelphia, Pa.
Dr. Carlisle S. Lentz ---------- University, Va.
Dr. John S. McKee, Jr. ---------- Philadelphia, Pa
Dr. Charles Edwin McNamara ---------- Washington, D. C.
Dr. Wilmer H. Paine ---------- Charlottesville, Va.
Dr. Charles H. Patterson ---------- Lynchburg, Va.
Dr. Charles H. Reagan ---------- Bristol, Tenn.
Dr. James Edward Shields, Jr. ---------- Petersburg, Va.
Dr. Harold Brown Webb ---------- Waynesboro, Va.
Dr. Dudley Williams ---------- Baltimore, Md.
Dr. Tiffany Johns Williams ---------- University, Va.

The Mid-Tidewater Medical Society

Held its regular quarterly meeting at West Point, January 26th, with Dr. R. D. Bates, president, in the chair. The meeting was opened with prayer by Rev. A. P. Gray. The morning session was taken up with business of the society, and several constructive measures were discussed and adopted for the help of the rural physicians. Following this, the members and their visitors were entertained at lunch by the local committee consisting of Dr. W. E. Croxton, chairman, Drs. W. S. Cox, M. H. Eames, J. R. Parker and M. H. Harris.

A very enjoyable and instructive program was presented in the afternoon by members of the staff of the Hospital Division of the Medical College of Virginia. Dr. W. T. Sanger, president of the college was present and made a few remarks. Dr. L. E. Sutton read a paper on "Schick Test and Immunization Against Diphtheria"; Dr. H. H. Ware talked on "The Value of the Rabbit Ovulation Test"; Dr. Wm. B. Porter discussed "The Treatment and Classifications of Anemias"; and Dr. I. A.

Bigger concluded the papers with a discussion of "Infections of the Hand." Members of the society discussed each paper at length. Other visitors were Drs. Henderson, Williamsburg, Va., Davis, Johns, Rucker and Bagby from Richmond. Members present were Drs. Croxton, DeShazo. Eames, Smith, Sandberg, Campbell, Lewis, Parker, Cox, Gwathmey, Clements, Gouldin, Ferry, Tabb, Bates, Darracott and Harris.

The society voted to meet next at Saluda, on the fourth Tuesday in April.

RESOLUTIONS ADOPTED BY THE MID-TIDEWATER MEDICAL SOCIETY

RESOLVED, That the Mid-Tidewater Medical Society go on record as favoring the reporting of findings on all patients, private or charity, to the referring doctors by the two state supported hospitals, that is, the Hospital Division of the Medical College of Virginia and the University of Virginia, as a most direct and definite means of educating the physicians in the country districts, and that copies of this resolution be filed with the chief of the staff of the two hospitals above mentioned and with the chairman of the Department of Clinical Education of the Medical Society of Virginia.

M. H. HARRIS, M. D.,
Secretary.

WHEREAS, the society has been sent a questionnaire, which has been duly answered expressing the views of the society, we feel that the further expression of our wishes may be helpful to the department, and we hereby submit the following resolution:

BE IT RESOLVED, That the Mid-Tidewater Medical Society go on record as heartily endorsing the postgraduate education of doctors of the rural districts and desire to extend to the committee its willingness to cooperate with it in its program to this end, and that this society respectfully suggests to the department that we feel that this program should be wholly of a practical character, such that the information and facts revealed at the meetings and clinics may be such as may be put into active practice in the remotest country districts by the rural practitioner;

AND FURTHER, we feel that these clinics and other programs put on will will be further beneficial to the country doctors if they are conducted wholly and solely with the idea of their utility to the country doctors;

AND THEREFORE, we, the members of the Mid-Tidewater Medical Society, composed only of rural doctors, wish to also desire the cooperation of city colleagues in this matter that we may thus be enabled to render more scientific and better service to our patients in the remote country districts.

M. H. HARRIS, M. D.,
Secretary.

The Lee County Medical Society

Held its annual meeting on January 18th, at which time the following officers were elected for the ensuing year: President, Dr. G. B. Setzler; vice-president, Dr. J. B. Muncy; and secretary-treasurer, Dr. W. J. Innes, all of Pennington Gap. The board of censors is composed of Drs. T. B. Ely, Jonesville, C. H. Henderson, St. Charles, and C. S. Gresham, St. Charles.

The Rockbridge County Medical Society

Met at Jackson Hospital, Lexington, Va., for its February meeting, with Dr. F. L. Thurman, of Buena Vista, presiding. Dr. Charles Groseclose, of Buena Vista, reported two cases of Acute Leukemia, and Dr. Reid White, Jr., of Lexington, reported a case of Agranulocytic Angina in a Boy of Fifteen. These reports were unusually interesting, in spite of the fact that all three patients died.

The Society voted that the Local Health Unit immunize the children of the county during the coming immunization campaign against diphtheria.

Officers elected for the coming year are as follows: President, Dr. F. L. Thurman (re-elected), Buena Vista; first vice-president, Dr. C. H. Davidson (re-elected), Lexington; second vice-president, Dr. Thomas F. Kennan, Raphine; secretary-treasurer, Dr. E. P. Tompkins, Lexington.

Roanoke Academy of Medicine.

At the meeting of the Academy on January 4th, papers were read by Drs. E. G. Gill, K. D. Graves, L. D. Keyser and W. P. Jackson. Dr. Gill's case report was illustrated by motion pictures, lantern slides and demonstration of the patient.

The meeting on February 1st was a dinner meeting and the papers were presented by invited guests: Drs. Thomas R. Boggs, professor of Clinical Medicine at Johns Hopkins University, Baltimore; Dr. Robert L. Payne, Norfolk, Va.; and Dr. Deryl Hart, professor of Surgery at Duke University, Durham, N. C.

At this meeting the Academy presented Dr. S. J. Gill with a watch, he having reached his seventieth birthday. The presentation speech was made by Dr. R. H. Garthright of Vinton, who was similarly honored in 1928.

Dr. Everett E. Watson, Salem, is president of the Academy, and Dr. Charles H. Peterson, Roanoke, secretary.

The Augusta County Medical Association

Had a very interesting meeting on February 3rd, at which time several papers were read. The next regular meeting will be held on the first Wednesday in May, but a special meeting has been called for the first Wednesday in April, to consider the report of the Committee on By-Laws. Dr. W. C. Roller, Fort Defiance, is president, and Dr. W. F. Hartman, Swoope, is secretary.

News Notes

State Society to Meet in Richmond.

At the recent meeting of the Council of the Medical Society of Virginia, it was unanimously voted to accept the invitation of the Richmond Academy of Medicine to hold the sixty-third annual meeting of the Society in Richmond, in the Fall of 1932. In accepting the invitation, the Council made the recommendation that the members of the Society take care of themselves in the matter of entertainment.

Definite dates for this meeting will be announced shortly.

All-Day Clinic in Norfolk.

An all-day clinic will be held in Norfolk, March 30th, at St. Vincent's and the Protestant Hospitals, for doctors of the Second Congressional District.

Dr. J. L. Rawls is chairman of this Clinic and has arranged to have an especially interesting meeting that night, at which time Dr. Daniel L. Borden, Professor of Surgery, George Washington University School of Medicine, will deliver an address illustrated with lantern slides.

Surgeon-General Hugh S. Cumming,

Washington, D. C., has been re-appointed as Surgeon-General of the U. S. Public Health Service for another term of four years and the appointment has been confirmed by the Senate.

Medical College of Virginia News.

Dr. James S. McLester, professor of medicine, University of Alabama, will deliver the third annual Stuart McGuire Lecture of the Medical College of Virginia, Richmond, on the night of March 4th. Doctor McLester, a special investigator in the field of nutrition, will speak on "Nutrition in Its Newer Aspects."

Under an arrangement made with the Richmond public library its facilities have been placed at the disposal of the patients in the Memorial Hospital, one of the units of the Medical College of Virginia, Richmond. A member of the library staff visits the hospital on each Monday, to find out the books desired by patients.

Dr. Paul White, distinguished cardiologist of the Massachusetts General Hospital, Boston, was a visitor at the college this month and gave a clinic for third and fourth year medical students.

A survey of the library of the Medical College of Virginia, Richmond, shows that there are 14,850 bound volumes available, 3,000 pamphlets, and 360 periodicals regularly received. The facilities of this library are at the disposal of all members of the profession.

The number of visits to the outpatient department of the Medical College of Virginia, Richmond, for the month of January reached the top for that month and proved to be the next to largest record for any month in the history of the department. There were 4,518 patient visits made to the clinics in January and 1,406 laboratory examinations were given, another record number. As a result of this the number of prescriptions filled by the dispensing pharmacy reached the peak for any month, 1,630.

The General Education Board of New York recently made a grant to the Medical College of Virginia, Richmond, for the continuance of the St. Philip Hospital post-graduate clinic, for Negro practitioners, at the college this summer.

The Medical College of Virginia, Richmond, had an exhibit at the meeting of the Tri-State Medical Association, Greensboro, N. C., in February.

Dr. Clyde Frost, of the Julius Rosenwald Fund, Chicago, was a guest of the college recently. He spent some time inspecting the new St. Philip Hospital school of nursing dormitory and educational unit, toward the

construction of which the Rosenwald Fund contributed $40,000.

News from University of Virginia, Department of Medicine.

On January 25th, Dr. I. S. Ravdin, of the Department of Research Surgery of the University of Pennsylvania, addressed the faculty and student body on Studies in Gall-Bladder Physiology.

At the meeting of the University of Virginia Medical Society on February 8th, Dr. J. Edwin Wood spoke on Ephedrine in Adams-Stokes Syndrome.

On January 28th, Dr. J. H. Neff spoke before the Alleghany and Bath Counties Medical Society, meeting in Covington, on Some Findings in Children with Chronic Pyuria.

Dr. H. E. Jordan attended the meeting of the Annual Congress on Medical Education, Medical Licensure and Hospitals in Chicago, February 15th and 16th.

News Notes from the Duke University School of Medicine and Duke Hospital.

On February 13th, Dr. Fred H. Albee, of the Post-Graduate Medical School, New York City, lectured at the Duke Hospital on Fractures of the Hip-joint.

On February 24th, 25th and 26th the National Board examinations will be given to fifty of the Duke medical students.

New Members of Committee on Child Welfare.

Dr. I. C. Harrison, President, has appointed Drs. F. D. Wilson, Norfolk, and A. T. Finch, Chase City, as members of the Committee on Child Welfare of the Medical Society of Virginia, of which Dr. W. P. Jackson, Roanoke, is chairman. Other members of this Committee are: Dr. Thos. H. Daniel, Charlottesville; Dr. W. Ambrose McGee, Richmond; Dr. Lewis Holladay, Orange; and Dr. Charles E. Conrad, Harrisonburg.

The Southwestern Virginia Medical Society

Is to hold its semi-annual meeting in Bristol, Va., the latter part of March. Dr. George A. Wright, superintendent of the State Hospital at Marion, Va., is president, and Dr. A. M. Showalter, Christiansburg, is secretary-treasurer.

Conquering Diphtheria.

A county health officer of Maryland reported to his State department of health that not a single classmate of a child who attended school for a week while suffering from a mild unrecognized attack of diphtheria had shown, to the date of his report, any sign of the disease, though a mild case of diphtheria is known to be as contagious as a severe case. Practically all the children, however, had previously received immunization treatments, and the department of health in a recent bulletin expressed the opinion that the district had thus been saved from an old-fashioned epidemic of this dread disease.

Dr. I. Roy Wagner,

Former Virginian, now with the U. S. Veterans Bureau, has been transferred from Fort Lyon, Colo., to Memphis, Tenn., where he is medical officer in charge of the Veterans Hospital.

Joins Richmond Health Unit.

Dr. W. A. Browne, has accepted a position with the Richmond (Va.) Health Department as medical inspector of contagious diseases. The appointment was made possible by the cooperation of the Rockefeller Foundation, which will bear all the expense of his salary and has appropriated $5,000 to aid the city in a determined campaign to cut down the prevalence of scarlet fever which has shown a steady increase in incidence in the past three years.

Dr. Browne is a Canadian by birth, but a resident of Poughkeepsie, N. Y. He graduated in medicine from the University of Toronto, Canada, and later took the degree of doctor of Public Health from the Johns Hopkins School of Hygiene and Public Health.

Dr. George W. Crile,

Of Cleveland, Ohio, gave an address before the Jefferson Hospital, Roanoke, Va., the latter part of January on his autosynthetic cell and the practical application of the knowledge received by research work on this cell. There was a large attendance of doctors from that section of the State.

Civil Service Examinations.

The U. S. Civil Service Commission, Washington, D. C., announces open competitive examinations for: Senior Medical Officer, Medical Officer, and Associate Medical Officer, in cancer diagnosis and treatment. Applications for these positions should be on file with the

above named Commission not later than March 22, 1932.

Dr. C. Bernard Pritchett,

Recently of Danville, Va., moved to Newport News, Va., the first of the year. He has offices at 2801 Washington Ave., where he is specializing in the practice of Dermatology and Urology.

Dr. Paul D. White,

Of Harvard University Medical School, Boston, gave an address before the Richmond Academy of Medicine on February 9th, his subject being "The Treatment of Cardiovascular Disease."

New York Post-Graduate Medical School and Hospital Celebrates Anniversary.

The fiftieth anniversary of the founding of the New York Post-Graduate Medical School and Hospital was celebrated January 30th, at the Annual Dinner of the Faculty Association of that institution at the Hotel Biltmore, in the presence of 500 guests.

The speakers of the evening were Dr. George H. Meeker, Dean of the Graduate School of Medicine, University of Pennsylvania; Dr. Nicholas Murray Butler, President of Columbia University; and Dr. Ray Lyman Wilbur, U. S. Secretary of the Interior.

American College of Physicians to Award Prize to Dr. O. T. Avery.

The American College of Physicians recently selected Dr. O. T. Avery, of the Hospital of the Rockefeller Institute of New York City, as the recipient of the John Phillips Memorial Prize for 1932.

This prize, an annual award by the College in the sum of $1,500.00, is given to perpetuate in the College the memory of Dr. John Phillips, of Cleveland, a man of outstanding accomplishments as investigator, teacher and physician, for many years a member of the Board of Regents of the American College of Physicians, who gave his life in saving others on the occasion of the Cleveland Clinic disaster on May 15, 1929.

The Sixteenth Annual Clinical Session of the College will be held in San Francisco during the week of April 4, 1932. Dr. Avery will deliver an address, "The Role of Specific Carbohydrates in Pneumococcus Infection and Immunity," at the Convocation on Wednesday evening, April 6th. At the conclusion of Dr. Avery's address, the prize will be presented to him by Dr. S. Marx White, of Minneapolis, President of the College. The distinction of this award is enhanced by the fact that although it was available the previous year, it was not possible to decide on a suitable recipient. This is, therefore, the first award made.

Hospital for Young Mental Patients.

The Emma Pendleton Bradley Home, the first hospital for children under thirteen years of age who are suffering from nervous or mental diseases, was recently opened in East Providence, R. I., according to *The Modern Hospital*. The building and endowment were given by Mr. and Mrs. George Lothrop Bradley in memory of their daughter, for whom it is named. Its director is Dr. Arthur H. Ruggles, president of the American Foundation for Mental Hygiene. Patients from needy families of Rhode Island and cases of unusual interest for study will be given first consideration. In every case charges will be in accordance with what the patient can pay. The hospital will provide opportunities for the study of epilepsy, the after effects of sleeping sickness, birth injuries of the central nervous system, brain tumors, behavior problems needing special treatment, and various other nervous disorders.

Sectional Meeting of American College of Surgeons.

The Virginia, North Carolina and South Carolina Section of the American College of Surgeons met at Greensboro, N. C., January 28th and 29th. There were about 300 in attendance. The meetings began with early morning clinics, which were well attended, and there were clinical sessions from 11:30 to 2:30 each day. Thursday evening was given over to a talking medical movie and on Friday evening there was a rousing Community Health meeting. Hospital meetings and specialists' groups were held each forenoon and afternoon. The Virginia members voted unanimously to petition the College to group the three states permanently.

In addition to the American College officials, there were the following visitors: Dr. George W. Crile, Cleveland; Dr. Burton J. Lee, New York; Dr. Alfred W. Adson, Rochester, Minn.; Dr. John O. McReynolds, Dallas, Texas.

Charleston, S. C., was selected as the next place of meeting in January, 1933.

Officers elected for the three states are as follows:

VIRGINIA—Dr. Clarence Porter Jones, Newport News, chairman; Dr. Joseph D. Collins, Portsmouth, secretary; Dr. Joseph T. Buxton, Newport News, counselor.

NORTH CAROLINA—Dr. David T. Tayloe, Washington, chairman; Dr. B. C. Willis, Rocky Mount, secretary.

SOUTH CAROLINA—Dr. Jos. S. Rhame, Charleston, chairman; Dr. Robert E. Abell, Chester, secretary; Dr. W. H. Nardin, Anderson, counselor.

During the week, speakers appeared before schools, churches, clubs and civic leagues in Greensboro, besides broadcasting, over National hook-ups, public health advice such as periodic medical examinations, cancer prevention, eyesight saving, hospital needs, etc.

Committees of Academy of Medicine.

The Richmond (Va.) Academy of Medicine recently appointed the following committees for the calendar year: *Program*—Dr. Warren T. Vaughan, chairman, and Drs. D. M. Faulkner and H. H. Ware; *Censors*—Dr. Carrington Williams, chairman, and Drs. B. R. Tucker and Manfred Call.

Dr. B. S. Yancey,

Who has been practicing for the past few years at Chase City, Va., has located in Harrisonburg, Va., with offices in the National Bank Building. He will be engaged in general practice.

Posture Day.

On Saturday, January 30th, a Posture Day was held at Charlotte County Court House for the mothers, fathers and teachers of certain posture cases that had been discovered in a county-wide examination of something over eighteen hundred school children in Charlotte County. A large number of mothers, fathers and teachers were present and a great deal of interest was shown in the work. Of the eighteen hundred children examined, about 200 were found to have defects, and about twenty-five of these were brought by their parents to the meeting for further examination and advice. This seems a definite step toward preventive orthopedics.

The meeting was held in the High School Auditorium under the direction of Mr. R. W. Bobbitt, Division Superintendent, Charlotte County Public Schools. The work of Dr. Thomas Wheeldon, othopedic surgeon, and his assistant was greatly supplemented by a very instructive talk by Mr. Eliot V. Graves, of the Department of Health Education of the State Board of Education.

Dr. and Mrs. Charles A. Young,

Roanoke, Va., sailed February 3rd, on the *Aquitania*, for a thirty-day Mediterranean Cruise.

Dr. J. Allison Hodges,

Richmond, Va., by invitation addressed the Danville (Va.) Woman's Club, the latter part of January. He spoke on Mental Hygiene in the Family.

The "Other" Case of Tuberculosis.

"Tuberculosis has so far been habitually considered to be a manifestation of social misery, and it has been hoped that an improvement in the latter would reduce the disease." These words were spoken by Robert Koch on that memorable March 24, 1882—exactly fifty years ago—when he announced before the Berlin Pathological Society the discovery of the tubercle bacillus. Fifty years!—and still we reap in this country an annual toll of some 90,000 deaths from tuberculosis.

Of course, obvious "consumptives" are not so commonly seen as formerly. Today it is the hidden, undiscovered bacillus disseminator, who is the chief menace to our youth. Grandmother's "chronic bronchitis," father's "stomach cough," often prove when investigated by the X-ray, to be the bed of tuberculous embers from which new fires are being lighted; fires which will break out into flame when the strain of young adulthood begins to make its demands. Koch's discovery led to the establishment of public health machinery designed to find every case of tuberculosis, and yet it is known that at least one-half of all cases with active tuberculosis in this country are not being "controlled," either by isolation in a sanatorium, education of the family by the public health nurse, or adequate instruction by the private physician. It is not enough to make a diagnosis in an individual: it is our obligation to inquire persistently where this individual got his disease and to whom he has already given it. Moreover, cases must be deliberately searched out. Every clue must be relentlessly followed if we are to make good Koch's promise to mankind, that the White Plague could and would be conquered.

A concerted effort to "find the other case"

will be made throughout the month of April, 1932, by means of a nation-wide educational campaign to be conducted by the 2,084 affiliated tuberculosis associations of the United States in what will be the fifth annual Early Diagnosis Campaign. During this time closer cooperation will be sought among doctors, health officers, public health nurses, and social workers, and anyone who suspects he may have the disease will be urged to go to his family doctor for a thorough examination, or to persuade anyone in his family who shows any of the "danger signs" to do the same.

H. E. KLEINSCHMIDT, M. D., *Director, Health Education, National Tuberculosis Association.*

Aubrey H. Straus,

Richmond, Va., consulting bacteriologist, has returned to his laboratory after a trip to France. While there, he on several occasions, visited the Pasteur Institute in Paris.

Dr. Calvin T. Burton,

For the past two years resident surgeon in ophthalmology, rhinology, and otolaryngology at the University of Virginia Hospital, has located in Roanoke, Va., where he is associated with Dr. H. B. Stone in the practice of the above named specialties. Dr. Burton graduated from the University of Virginia in 1928 and had intern service at the University Hospital and in New York.

Trends in Mental Disease in New York State.

In spite of the general improvement in the physical health of the population of New York, the new cases entering the hospitals for mental disease are annually increasing, and the rate of increase is higher than that of the general population. In the fiscal year of 1931, the average daily patient population of these institutions in New York during the year was about 54,000. The rate of new cases per 100,000 of population in 1931 was seventy-seven as compared with seventy in 1920 and sixty-five in 1910.

The great extension of the use of automobiles has caused a significant increase in the number of mental diseases due to accidents and striking increases have occurred in recent years in the new cases of mental disease due to hardening of the arteries. Syphilitic mental diseases also constitute a serious problem. The trend in alcoholic mental disease has been very irregular during the past twenty years, while mental diseases due to drugs are comparatively few and are not increasing.

American Board of Obstetrics and Gynecology.

The next written examination of the Board will be held in nineteen different cities of the United States and Canada at 2 P. M., on Saturday, March 26, 1932. The general, oral and clinical, examination will be held in New Orleans on Tuesday, May 10, 1932, immediately preceding the meeting of the American Medical Association. Reduced railroad fares will be available.

For detailed information and application blanks apply to the Secretary, Dr. Paul Titus, 1015 Highland Building, Pittsburgh, Penna.

An Opportunity to Earn $15,000.

Mead Johnson & Company announces an award of $15,000 to be given to the investigator or group of investigators producing the most conclusive research on the vitamin A requirements of human beings.

Candidates for the award must be physicians or biochemists, residents of the United States or Canada who are not in the employ of any commercial house. Manuscripts must be accepted for publication before December 31, 1934, by a recognized scientific journal. Investigations shall be essentially clinical in nature, although animal experimentation may be employed secondarily.

For other details of the Vitamin A Clinical Research Award, apply to Mead Johnson & Company, Evansville, Ind.

Dr. J. McCaw Tompkins

Was elected president of the Westmoreland Club, Richmond, Va., at the annual meeting held the middle of February.

Dr. Otto F. Geck,

Formerly of Petersburg, Va., but for the past three years of New York, announces the opening of his office for the practice of Neurology and Psychiatry at the Neurological Institute of New York, 706 West 168th Street, New York City.

Dr. and Mrs. Charles W. Scott,

Of Port Republic, Va., are spending their vacation in Orlando, Florida. They also expected to visit Miami and Palm Beach before returning home early in March.

Dr. W. Gayle Crutchfield,

Lexington, Ky., has been appointed assistant neurological surgeon in the Hospital Divi-

sion of the Medical College of Virginia. Dr. Crutchfield is a graduate of Johns Hopkins University and, after an internship in the Woman's Hospital, Baltimore, and at Peter Bent Brigham Hospital, Boston, took further post-graduate work in Vienna.

Dr. Cushing to Retire from Teaching.

It has been announced that Dr. Harvey Cushing, Moseley professor of Surgery at Harvard University School of Medicine, will retire September 1st, after having filled this position for twenty-one years. He will be succeeded by Dr. Elliott C. Cutler, at present professor of surgery at the Western Reserve University School of Medicine, Cleveland, Ohio.

Married.

Dr. Benjamin A. Rice, Forest, Va., and Miss Katherine Elliott, Alpine, Texas, on January 20th. Before her marriage, Mrs. Rice spent six and a half years in Madrid, Spain, in the office of the American commercial attache. For the past two years she has been assistant trade commissioner under the Bureau of Foreign and Domestic Commerce.

Dr. Percy Gatling Hamlin, Philadelphia, Pa., and Miss Elizabeth Beverly Scott, Harrisburg, Pa., February 6th, in Williamsburg, Va. Dr. Hamlin is an alumnus of the Medical College of Virginia in the class of '16.

Dr. Edward Holloway Williams and Miss Margaret Lane Barlow, both of Richmond, Va., February 6th. Dr. Holloway is a member of the class of '30, Medical College of Virginia and is now connected with the staff of Westbrook Sanatorium.

Lieutenant Commander Toson O. Summers, formerly of Richmond, Va., now with the medical corps of the U. S. Navy and stationed at the Brooklyn, N. Y., Naval Hospital, and Miss Cynthia Peacock, of "Burleigh," Derby, England, on February 16th, in London.

Dr. Eugene Anthony Bain and Miss Edna Mary Pittaluga, both of New York, recently. Dr. Bain is a native of Petersburg, Va., and graduated from the University of Virginia, Department of Medicine, in 1927.

Dr. Wesley O. Brandon, Yadkinville, N. C., of the class of '28, Medical College of Virginia, and Miss Kathleen Cooley Craver, at Hillsville, Va., December 13th.

Dr. Martin A. Hatcher, Hamlet, N. C., an alumnus of the Medical College of Virginia, and Miss Nora Langston, Laurens, S. C., December 26th.

Community Hospital, Hopewell, Va.

The doctors of Hopewell, Va., composing the medical staff of the Community Hospital, in that place, in February, elected Dr. F. Musgrave Howell as president for the ensuing year. Other officers elected at this time were: Vice-president, Dr. Oliver L. Jones, and secretary-treasurer, Dr. W. W. Cleere. Dr. W. M. Phipps was elected to the board to fill the vacancy of the outgoing member, Dr. J. C. Bodow.

The Tri-State Medical Association of the Carolinas and Virginia

Had a most excellent meeting in Raleigh, N. C., the middle of February with an attendance of about 250. The president, Dr. Beverley R. Tucker, of Richmond, Va., presided. Greenville, S. C., was selected as the place of meeting for 1933 and the following officers were elected: President, Dr. Clarence A. Shore, Director of the State Laboratory of Hygiene, Raleigh, N. C.; vice-presidents, Dr. James W. Hunter, Norfolk, Va.; Dr. N. C. Daniel, Oxford, N. C.; and Dr. A. E. Baker, Charleston, S. C. Dr. J. M. Northington, Charlotte, N. C., was re-elected secretary.

Dr. S. A. Tuck,

Recently of Eggleston, Va., has located at Pembroke, Va., where he will continue the practice of his profession.

Dr. Francis B. Teague,

Recently connected with the McClung Hospital, Richwood, W. Va., has located in Martinsville, Va., for the practice of medicine and surgery. He graduated from the University of Maryland, Baltimore, in 1927, following which he spent a year at the University Hospital, that city, and two years at Jefferson Hospital, Roanoke, Va., before locating at Richwood.

Dr. James E. Wheeler,

University, Va., has been appointed a first lieutenant in the Medical Reserve Corps, U. S. Army, in the capacity of Surgical Ward Officer to the 41st General Hospital.

Annex to Grace Hospital Opened.

The annex to Grace Hospital, Richmond, Va., was formally opened for inspection by the public on February 2nd. The annex is five stories in height and modern in every detail. It increases the capacity of the hospital

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from fifty-five to one hundred and five beds. The fourth floor is given over to the operating suite and the addition also allows for expansion of the former laboratory and X-ray departments. An emergency receiving room is on the first floor. The hospital was opened originally in March, 1912, and was bought by the present owners on July 1, 1929.

Dr. D. O. Hamblin,

Recently of Lynchburg, Va., has moved to Pennington Gap, Va., where he is affiliated with the Lee General Hospital. Dr. Hamblin graduated from the University of Virginia in 1929, and was connected with the University Hospital until he moved to Lynchburg in the early Fall.

Hourly Nursing Service.

The Private Duty Nurses Club of Richmond, Va., announces the inauguration of an Hourly Nursing Service, in which its members are subject to call for service in all branches of the work that can be adequately performed in the home, at the following rates: $1.50 for first hour or less, and 50 cents for each additional hour or fraction thereof.

The Club realizes that due to the present economic situation there is a pressing need for a service of this kind in Richmond, which has heretofore been furnished only by the I. V. N. A. The adoption of a similar movement will render a distinct service to the people who do not care for or cannot afford a full time nurse. It will also help to solve the unemployment situation among the members of the Private Duty Nurses Club.

For information, dial 3-1656. (*Adv.*)

Obituary Record

Dr. Reginald R. Walker,

Prominent laryngologist of Washington, D. C., died January 15th of typhoid. He was fifty-four years of age and a graduate of the Georgetown University School of Medicine in 1900. Dr. Walker had been a member of the Medical Society of Virginia for about twenty years. He served in the medical forces during the World War.

Dr. Nathan Peabody Tyler

Died at the home of his daughter in Norfolk, Va., January 20th. He was eighty-four years of age and graduated from the Yale University School of Medicine, New Haven, Conn., in 1879. Dr. Tyler was prominent in the medical profession of New Rochelle, N. Y., and New Haven, Conn., prior to retirement. A son and daughter survive him.

Resolutions on Death of Dr. James.

At a meeting of the Richmond Academy of Medicine, held on January 26, 1932, the following resolutions were unanimously adopted:

Whereas: It has pleased an all-wise Providence to removed from our midst Dr. Lorrimer F. James, who passed to his reward on December 28, 1931, after an illness of two months Be it, therefore,

Resolved: That in the death of Dr. James, the Richmond Academy of Medicine has lost a valuable member and the community and State have lost a substantial and loyal citizen. Dr. James upheld the best traditions of his profession, which was abundantly manifested in the keen interest he took in his patients, earnestly endeavoring at all times to give them the benefit of the best skilful care available. While his well-rounded general knowledge of medicine amply equipped him for his work as a general practitioner, he was at all times acutely conscious of his limitations, and never failed to give his patients the benefit of consultants.

His high character, profound interest in his work, and his broad religious qualities endeared him to a large circle of friends. It could truly be said that the poorest patients profited equally from his friendly interest and scientific consideration with his wealthiest ones. An earnest God-fearing physician and friend of the poor has passed on to his reward. Be it further

Resolved: That these resolutions be spread upon the minutes of this organization, that a copy be sent to the bereaved family, and that they be published in the VIRGINIA MEDICAL MONTHLY.

MARK W. PEYSER,
Secretary-Treasurer.

In the death of Dr. Lorrimer F. James, the Retreat for the Sick, a large number of people in and around the city of Richmond, as well as several sections of the State of Virginia, have sustained the loss of a friend and humanitarian. He practiced his profession successively and successfully for a number of years in Gloucester County, the counties of the Eastern Shore and the city of Hopewell, before locating in Richmond.

That he endeared himself to the people of the various communities served by him has been proven by the demonstrations of affection that have followed him. He was untiring in his devotion to his work, always alert to acquire additional knowledge and skill.

As a practitioner of medicine, he was conscientious and sympathetic, enjoying the confidence and esteem of a large clientele, ministering to its needs promptly at all times; and, so,

WHEREAS, It has pleased an all-wise Providence to remove from our midst our friend and co-worker, therefore be it

RESOLVED by the Medical and Surgical Staff of the Retreat for the Sick, that we tender our heartfelt sympathy to the bereaved family; and be it further

RESOLVED, that a copy of this preamble and these resolutions be transmitted to the family, that they be spread upon the minutes of this body as a record of the Hospital and that they be published in the VIRGINIA MEDICAL MONTHLY.

J. W. HENSON,
HOWARD URBACH,
WM. RUSSELL JONES.

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